

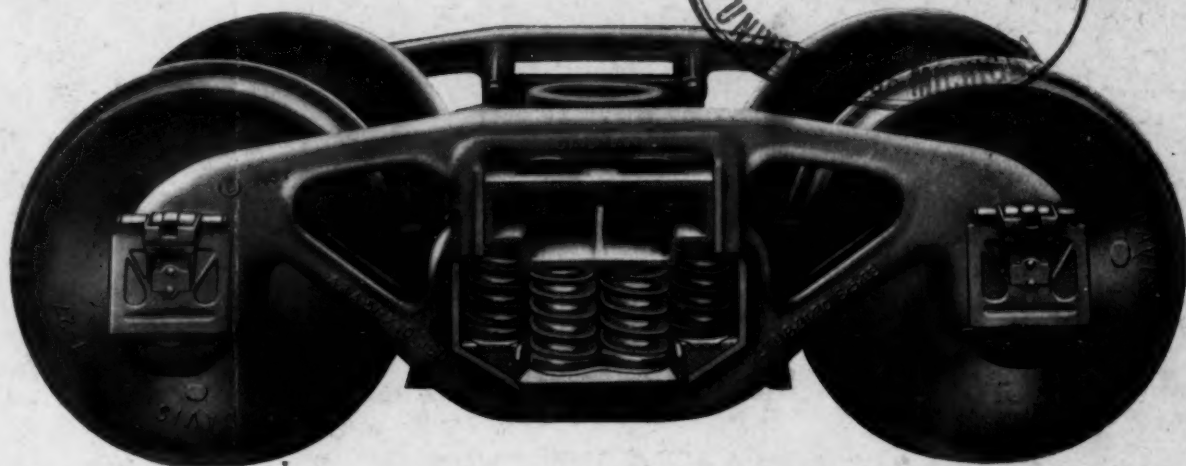
Railway Age

AND RAILWAY REVIEW

FIRST HALF OF 1928—No. 9

MARCH 3, 1928

SEVENTY-THIRD YEAR



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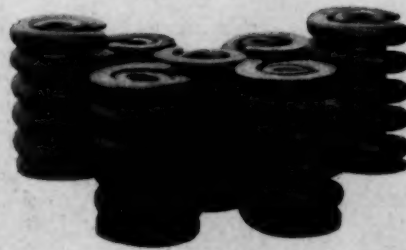
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Railway Age

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Railway Age

Vol. 84, No. 9

March 3, 1928

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Operating Officers and the Law

THE railways are so closely concerned with the law that they must perforce maintain a large legal department. But the legal department should not be alone in its concern for the law as it affects the railways. Operating officers are also more or less intimately concerned with law in their daily activities. Manifestly, it is impossible and unnecessary for operating officers to possess a thorough and detailed knowledge of the law, but they should, at least, have some idea of it. The Union Pacific has found a means of acquainting operating officers and others currently with the law as it affects the railways, in the form of a bulletin issued periodically by the legal department. This bulletin is distributed to all officers and contains brief, non-technical digests of all recent court decisions affecting railway operation, as well as of general cases which would be applicable in railway practice. By this means the operating officers of the Union Pacific are kept in touch with current and pertinent legal subjects without being compelled to spend much time in laborious study.

Reading Gets Motor Coach Operating Certificates

THE news in the Motor Transport Section of the *Railway Age* of February 25, that the Reading has secured the charter of its highway subsidiary, the Reading Transportation Company, and has received permission to operate two motor coach routes in the state of Pennsylvania, has an interest and significance beyond that which appears on its face. It is, of course, interesting that another railway has been added to the lengthening list of those which are operating motor coaches to supplement their train service. It is much more interesting and significant, however, that the securing of the charter and two certificates constitute a victory for the Reading in a fight which it has carried on for more than two years. Those who have expressed impatience with the railways for their failure or delay in getting into extensive motor coach operations apparently do not realize that in many instances this has been due to factors over which the railways have no control. As the regulation of motor coach operation is general, the railways must secure certificates in virtually all instances before they may engage in it, and such certificates are not always easy to secure, as witness the Reading's experience, the experience of the Baltimore & Ohio in West Virginia, and that of the Chicago & Alton in Illinois and Missouri. The Reading had to meet and overcome in Pennsylvania the strongest kind of opposition to its plans. Its ultimate success should encourage those other railways which are trying to establish extensive motor coach systems supplementary to their railway lines, but which have as yet failed to secure the necessary permission to do so.

The Agent's Part in Car Utilization

LOCAL freight agents are in a position to be of material assistance to operating officers in increasing the miles per car per day, avoiding car shortages and, in general, increasing freight car utilization. Among the more obvious ways in which this result may be obtained, is co-operation between the agents and the shippers and receivers of freight, so that cars will be loaded and unloaded promptly and heavier loading encouraged. There are other less obvious methods, however, which should not be overlooked. For example, a greatly increased car efficiency has been found to result if agents synchronize their loading schedules with the train service available and secure the co-operation of the shippers in this regard as well. By this means, cars may frequently be moved from the initial station on the day loaded, resulting in manifest savings. The paper work in connection with carload movements, if supervised with sufficient care, also is capable of much improvement. Agents, when signing bills of lading covering shipments to large cities, should insist that the consignee's street address be given and, wherever possible, the name or number of the delivery track as well, to facilitate placement. Each car should be accompanied by proper waybills, customs papers, home route cards and other necessary documents. If a number of documents are necessary for one car, all of them should be attached firmly, so that they cannot be lost, resulting in annoying and unnecessary delays at terminals, custom ports or destinations. The modern tendency to view the agent as an increasingly important factor in operating department affairs is wise and should not be underestimated.

Savings in the Electrical Department

IN these days of increased hourly wage costs and declining revenues, railway officers generally are becoming increasingly interested in the economic study of all phases of railway operation and maintenance. This attitude lends interest to the work of the electrical engineer of one western road who has been able to effect a reduction of 19.3 per cent per car per month in the cost of maintenance and operation of car lighting facilities in 1927, as compared to the previous year. This is worth noting because the total annual reduction on this road amounted to \$16,000. That this saving did not represent a decrease from what might be considered an abnormally high figure for the preceding year, is shown by the further fact that the unit cost in 1926 was itself 12.2 per cent lower than in 1925. In other words, it cost this road \$27,000 less to maintain and operate all of its passenger car lighting equipment in 1927, than in 1925. And this was effected without appreciable capital investment, but almost entirely by a careful study of maintenance practices to forestall trouble rather than to

repair equipment after failures. The same road reduced its cost of headlight maintenance about \$8,000 in 1927, as compared with the year previous; this reduction reflected the continuance of a trend which has been noticeable for the last three years. The 1926 saving was about \$16,000 and the 1925 saving, about \$17,000, both figures representing decreases under the costs for the previous years. None of the foregoing data were prepared by the electrical department but all are accounting department figures. It is evident, therefore, that the electrical department offers opportunities for economies comparable with other departments to which more attention is commonly directed.

Station Grounds Are Private Property

THE United States Supreme Court has decreed that a railroad's station grounds are at its own disposal. Specifically the action was one brought by the Delaware, Lackawanna & Western to enjoin the Town of Morristown, N. J., and independent taxicab operators from setting up a public hack stand on the railroad station grounds in that municipality. Competition between taxicab drivers for patrons created conditions of noise and turmoil which the road endeavored to correct by granting an exclusive privilege on its property to a single responsible operator. The municipality thereupon adopted an ordinance forbidding all taxicabs the use of the station grounds. The operator with whom the railroad had contracted then tried to upset this ordinance in the state courts and, when he failed in this effort, the ordinance establishing the public hack stand on railroad property was passed. The Supreme Court's decision leaves no doubt at all that a railroad station is private property and that the railroad may dispose of its facilities as it sees fit. The question involved is not one of the very highest importance. On the other hand it concerns a situation with which railroads have to deal at almost every important station. A clear-cut decision like this makes possible putting an end to troublesome, parasitic trespass; it would appear also to give the railroads a weapon in dealing with competitive motor coach lines, some of which have had the effrontery to solicit business on railroad property, having their passengers utilize railroad station facilities.

Operating Records in 1927

THE efficiency with which the railroads were operated in 1927 is indicated by a compilation just issued by the Bureau of Statistics of the Interstate Commerce Commission comparing selected items of freight service operating averages for Class I railroads for the years 1920 to 1927, inclusive. This shows that the best record of the eight-year period was made in 1927 as to five of the ten items selected for comparison. Most of the other five items selected for this comparison were affected more or less by the falling off in traffic, which occurred particularly during the latter part of the year. The features of railway operation in which new records were established in 1927 for the eight-year period, which also means that they were the best records ever made for a year, were in the gross and net number of tons to a trainload, 1,780 and 778, the gross number of tons hauled one mile for each hour of train operation, 21,945, the average number of cars per freight train, 46.5, and the pounds of coal used as fuel for each thousand gross ton-miles of freight, 131. The gross trainload,

exclusive of locomotives in 1927, 1,780 tons, compares with an average of 1,443 tons in 1920, while the net trainload, 778 tons, compares with an average of 708 tons in 1920. The number of cars to a train has shown an increase from 36.6 in 1920 to 46.5 in 1927, while the fuel consumption required for a thousand gross ton-miles of freight service has been reduced from 162 pounds in 1920 to 131 in 1927. As to the other items in which new records were not made in 1927, the number of net tons carried a mile for each mile of road per day, which was 5493 in 1927, had been exceeded in 1926, which year also showed the best record for net ton-miles per car per day, 531, as compared with 518 in 1927. The average mileage per car per day, 30.3, had been exceeded in 1926 when the average was 30.4. The average carload in 1927 was only 27.2 tons, whereas the best record of the period was made in 1920. The percentage of loaded car miles to the total car mileage also showed the best record in 1920, 67.9 as compared with 62.9 in 1927.

Station Parking Space For Railway Patrons

THE Southern Pacific, as stated in a news item in the *Railway Age* of February 25, is preparing plans for the installation of free automobile parking space for its patrons adjacent to stations where the ground space and facilities will permit. No charge will be made to patrons for parking their cars in these spaces, since they are intended merely as an extra convenience for them. This is an excellent idea and it is reasonable to expect that the installation of these free parking spaces will have the effect of bringing back to the Southern Pacific a substantial part of the traffic which has been lost in recent years to the private automobile. The free parking space plan has been tried by street car companies in a number of cities with considerable success. Its purpose in those instances was the same—to win back to the railways passengers who had been using their automobiles instead of street cars in riding between the residential and business sections of the cities. It is probably true that most of the people who have been in the habit in recent years of traveling from place to place in their automobiles instead of in railway trains have been led to do so by the fact that their motor cars were immediately at hand while railway stations were some distance away and inconvenient of access. Furthermore, their automobiles, while expensive in cost per mile, might as well be used since the major costs of automobile operation continue whether they are actually used or not. The free parking space idea makes it possible for automobile owners conveniently to utilize the advantages of both the automobile and the train. Properly advertised and "sold" to the public it should bring back to the railway a substantial amount of the traffic that has been lost to the highways.

Justifying the Supply Man

THE justification for the railway supply man, and particularly the industrial army back of him, representing 2,000,000 men, more or less, in the modern railway supply and associated industries, was presented most convincingly at the February meeting of the Western Railway Club, a report of which appears elsewhere

in this issue. The question, "Why the supply man?" was frankly asked and as frankly answered to the satisfaction of those present. Few new thoughts, which were not more or less generally recognized, were advanced during the meeting, but the restatement of fundamental facts and principles was most acceptable because, through long familiarity, many of them are overlooked or forgotten. The function of the railways is to manufacture and, in the modern interpretation, sell transportation. The function of the supply industry is to relieve the railways of the great increase in responsibility, plant investment and size of staff, as well as the delay, waste and duplication of effort, which would be involved if each road were to attempt to supply its own material needs on a relatively small scale of production. The railways pay for equipment and supplies as well as engineering service connected therewith—and rightly so. It cannot be successfully disputed that they would pay more if each filled its own needs in these particulars. The mutual dependence of the railways and the railway supply industry upon each other for growth, development and prosperity was strongly emphasized at the meeting. One speaker referred to the fact that a considerable proportion of the supply companies paid no dividends last year, an unhealthy condition for all concerned, which can be partially overcome at least by more stabilized railway purchases. Another point, of possibly minor importance but still in the interests of economy, was made by a man formerly for many years in railway service who said that time and money can be saved by railway men giving more prompt attention to visiting supply representatives who are now in some cases allowed to wait several hours and then told that an interview cannot be granted. Tribute was rightly paid at the meeting to the performance records established by the railroads in 1927 and to the railway supply industry, without whose effective co-operation these records could not have been attained.

A Five-Point Loss in Railway Stock Prices

THE *Railway Age* average price of 20 representative railway stocks stands this week at 116.21. This means that it has declined five points from where it stood during most of December and from where it was the first week of January. There are several factors to which may be ascribed the decline that has taken place in the prices of railway stocks during the past few weeks. Net railway operating income in December, 1927, was 30.8 per cent less than in December, 1926. The net operating income reported by the carriers for the full year 1927 showed a reduction from 1926 of 12 per cent, the more substantial part of the reduction having taken place in the latter months of the year. The January earnings statements are now being made public, and the roads that are showing improvement over their figures for January of last year are decidedly in the minority.

A second factor has been the railway consolidation situation. A year ago, there was a great amount of excitement in the stock market over merger possibilities. As a result, there were days in which the sales of stocks of individual medium-size or small railroads exceeded in number of shares the sales of the stock of General Motors or other of the greater industrial companies. There were instances in which there was a greater than one hundred per cent turnover of a carrier's total stock outstanding in a single week. Naturally the prices of

the stocks in question were affected accordingly. In contrast with this, there have been several days lately in which the sales of railway stocks have only slightly exceeded 100,000 of the one and three-quarters million shares sold, which means that all of the sales of railway shares have on some days been less than the sales of the stock of certain single industrial concerns. One estimate has been made that the total railroad shares sold this year to date have amounted to about six and one-half million in contrast with sales in the same period of last year of some 20½ million shares.

The bulls and bears seem fully aware that there has been very little railway consolidation progress lately. There is a general impression in Wall Street that the Interstate Commerce Commission will continue to refuse to approve consolidation proposals until the law relating to consolidation has been changed. Investors in railway securities are wondering what Congress is going to do next, and naturally, in the light of this uncertainty, are not keenly interested in making investments in the railway field.

Commutation and Other Passenger Traffic

THERE is one branch of railway service which, while of very material benefit to the public, receives little popular attention. This is the commutation service furnished by a number of steam lines. As this service is performed mainly in the vicinity of the large cities, it is doubtful if the extent of this traffic is generally recognized.

Passenger traffic statistics are available now for the first 11 months of 1927. In this period the Class I lines carried approximately 760,000,000 passengers, of which some 408,000,000 were commuters. In other words, 54 of every 100 passengers carried by the railways in this period, were commutation passengers.

The average trip in commutation traffic in 1927 was 15 miles. When the total number of commutation passengers handled by the railways in the first 11 months of 1927 is converted to a daily basis, it appears that in this period approximately 610,000 commuters were carried each day for a round trip to and from their homes averaging 15 miles in each direction. In other words, the commutation service rendered by the railways was equivalent to carrying the entire population of the states of Nevada, Wyoming and Delaware 15 miles to work in the morning and 15 miles home again at night every day Sundays and holidays included.

While commutation passengers numbered 54 per cent of the total passengers carried, when the average journey per passenger is considered commutation traffic, of course, represents a much smaller proportion of the total. While the average commuter's trip was 15 miles, the average journey for other passengers was 71 miles. On the basis of passenger miles, commutation traffic in the first 11 months of 1927 therefore amounted to only 20 per cent of the total passenger traffic.

The figures for the first 11 months of 1927, when compared with corresponding reports for previous years, indicate that on the basis of passenger miles the commutation traffic of the railways in 1927 was the largest handled in any year since the complete compilation of the figures began in 1922. From 1922 to 1927 commutation traffic increased more than 8 per cent. In a way, however, this increase may perhaps be regarded as a somewhat doubtful blessing, since the average commutation revenue per passenger mile is only about one-

third of the average revenue per passenger mile for traffic other than commutation, while on the expense side are the facts that the commutation traffic is handled at two peak periods daily and that it utilizes a very considerable amount of highly valuable terminal facilities, frequently to the inconvenience of through traffic.

While commutation traffic is on the increase, the total passenger traffic in these months of 1927 showed a decline below the corresponding months of 1926, thus continuing the progressive losses which have occurred in every year since 1923. On the basis of the 11-month figures, 1927 showed losses of 33 per cent below 1920, 16 per cent below 1923, and three per cent below 1926, in the total number of passengers carried, and losses of 28 per cent under 1920, 11 per cent under 1923, and five per cent under 1926 in total passenger miles.

On the basis of gross revenues it is estimated that the total railway passenger traffic in the first 11 months of 1927 was made up of Pullman traffic 45.6 per cent, commutation traffic 7.6 per cent, and other day-coach traffic 46.8 per cent. In the same months of 1926 the corresponding figures were 44.1 per cent for Pullman traffic, 7.2 per cent for commutation and 48.7 other day-coach traffic.

The Crossing Problem

THERE are few problems confronting the public today which offer less promise of a complete and satisfactory solution than that of the grade crossings of highways and railways. While the hazards inherent in such crossings have been recognized since the earliest days of the railroads, it was not until the advent of the present-day highway motor vehicle traffic that highway crossing accidents assumed such grave proportions. Furthermore, these accidents are in a large part but one manifestation of the condition which is responsible for all manner of accidents in which highway vehicles are involved, namely, the placing of powerful high-speed machines in the hands of persons, who are examined but superficially, if at all, as to their physical, mental or moral qualifications.

It is for this reason that many contend that there is no real solution of this problem short of complete elimination of grade crossings, a view which is countered most emphatically by estimates showing that the cost of such wholesale separation of grades would equal the present investment in the railroads. This factor of cost in grade separation work received little serious consideration from the public so long as the railroads were compelled to pay all, or nearly all of the expense. But, following the success of the efforts of the railroads to demonstrate that a considerable share of the burden of such improvements must be borne by the public, there has been a considerable change in attitude. Whereas, negotiations relative to such improvements were at one time primarily in the nature of contests between the public and the railroad for the purpose of determining whether the carrier could be forced to carry out the work at its own expense, they now take the form of deliberations for the purpose of determining how the expense should be divided and whether each party is able to bear its share.

This is no simple matter; it entails a consideration of the relative responsibility for the conditions which make a grade separation necessary and of the benefits to accrue to each party as a consequence of the improvement. But these factors are so intangible that there is a wide difference of opinion as to the weight to be given

them and much effort has been given to the study of rules or principles which could serve as the basis upon which such negotiations may be entered into. The results of one investigation of this character are presented in a paper by Harry D. Blake, grade crossing engineer of the Wisconsin Highway Commission, which is reproduced on another page of this issue. While Mr. Blake's views may not coincide in their entirety with those of many railway officers who have given much thought to this subject, they are clearly the result of an honest effort to consider the primary factors which enter into this complex problem. Furthermore, they manifest an appreciation of the burden imposed on the railroads in meeting demands for improvements of this type. The attitude of the author is surely a refreshing contrast to the arbitrary position assumed by public authorities in years gone by and which unfortunately is still encountered in some quarters. This is a hopeful sign, but it is well to bear in mind that even the assumption of a most reasonable point of view on the part of all public authorities in dealing with the railroads on the subject of grade separation, will not solve the primary problem of raising the billions of dollars which must be spent if all highway grade crossings in the country are to be eliminated.

Training for Official Positions

WITH the intensification of railway operations and the various complications which have accompanied the attempts to more adequately meet modern service requirements, consideration has been focused upon the necessity for giving greater attention to the training of men for supervisory and official positions. One evidence of this is the steadily increasing interest which has been taken by the supervisors and officers themselves in special leadership and management courses and in the promotion of foremen's and supervisors clubs and organizations. The colleges and universities have tried to assist in various ways, in both engineering schools and in the more recently developed business schools, some of which have provided special courses in transportation. It is only natural, also, that some attempts should have been made to apply the co-operative educational methods which were first inaugurated by Dean Herman Schneider of the University of Cincinnati, many years ago. The most extensive application thus far of such co-operative education as applied to the railroads has been in connection with the Georgia School of Technology and the Central of Georgia and other southeastern roads.

There has been some criticism and comment on the part of university leaders because the railroads have not shown more enthusiasm in utilizing their graduates. The engineering and mechanical departments have taken into their service large numbers of such graduates, and in some cases have arranged to put them through special courses of training, better to fit them for responsible positions in the organization. There have also been some attempts on the part of a few railroads to put a small number of college graduates through special courses in the transportation department, to prepare them for supervisory positions in the operating department. In some cases, however, the roads seem to have been somewhat embarrassed in finding a way to properly place these young men when they had completed these courses. In the light of these facts, it is interesting to note that the Boston & Maine Railroad, in co-operation with the Massachusetts Institute of Technology, has undertaken to develop a special course of training, the last

two years of which will be made up in about equal parts of work at the Institute and practical experience on the railroad, and the objective of which will be to develop the students for "responsible positions in the transportation, motive power and engineering departments". The course was only just started last fall, so that it will be something like a year and a quarter before any of the young men will reach the point where they will actually enter the railroad service and thereafter alternate the work at the university with their periods of practical experience in railroading.

It will be several years before any attempt can be made to evaluate the results of this experiment. Apparently, however, it does reflect a real need on the part of the railroads for a higher trained personnel for supervisory and official positions. The demands upon the railroads are steadily increasing and every reasonable effort should be made to train the personnel to keep apace with these demands. Efforts are being made to improve the personnel, official and otherwise, in many different ways and it is doubtful as to what the final outcome may be with respect to these various experiments. The problem, however, is so great and so much depends upon its proper solution that no effort should be spared to develop by experiment and other means the principles and practices upon which final success will rest. Progress in carrying out the Boston & Maine experiment will undoubtedly be watched and studied closely by other railroads.

Cure Prescribed--Should Patient Be Kept Waiting?

EASTERN Pennsylvania, all of New Jersey, Southern New York State and Eastern Connecticut form a vast metropolitan community, with principal nuclei in the cities of New York and Philadelphia. This whole area is bound together industrially, economically and socially in a manner calling for the highest type of transportation service in point of speed and frequency, placing all points in the area in constant and quick access of each other.

The problem of providing the transportation in this district is most complex, and almost every method is used. For passenger transportation in the larger cities there are rapid transit lines for the longer distances, and trolleys and motor coach lines for the shorter hauls. Among the larger centers of business, and between the business centers on the one hand, and residential and recreational communities on the other, frequent, high-speed train service is provided—in many cases at very low rates.

There is not one transportation agency now being used in this metropolitan area which is not necessary to its prosperity and growth. Each one—the train, the rapid transit line, the motor coach, the ferry and the trolley—has its legitimate field. These various agencies are under the management of many different companies. If they were without any accountability to public authority, but were allowed to charge any rates they could collect, establish any routes they liked, begin or suspend operation at will, the whole populous area would be thrown into chaos. Fortunately, however, for the public good, there are bodies authorized to act as arbiters between the various companies and the various forms of transport—bodies required in their decisions to consider primarily the public welfare. We refer, of course, to the various regulatory commissions.

Thus the various agencies of transportation in the area, freed from cut-throat competition and uncertainty, are able to devote themselves to perfecting service in their own proper fields. *Freed from cut-throat competition, did we say?* Well, not quite. The railroads are subject to regulatory authority. The rapid transit lines are subject to regulatory authority. The trolley lines, the ferries and the intrastate motor coach lines are subject to regulation. But attacking the prosperity of all of them and threatening their ability to continue efficient service to their patrons, are the interstate motor coach lines which are operating generally throughout this area without any hindrance.

They can operate when they will, being under no obligation to give regular service. They can charge any rates they think they can collect. They are thus given a tremendous advantage over the other transportation interests in the area, which must play the game according to stringent rules. It is as if one player in a football game were given a dagger to wield and excused from all penalties ordinarily imposed for violating the rules of the game.

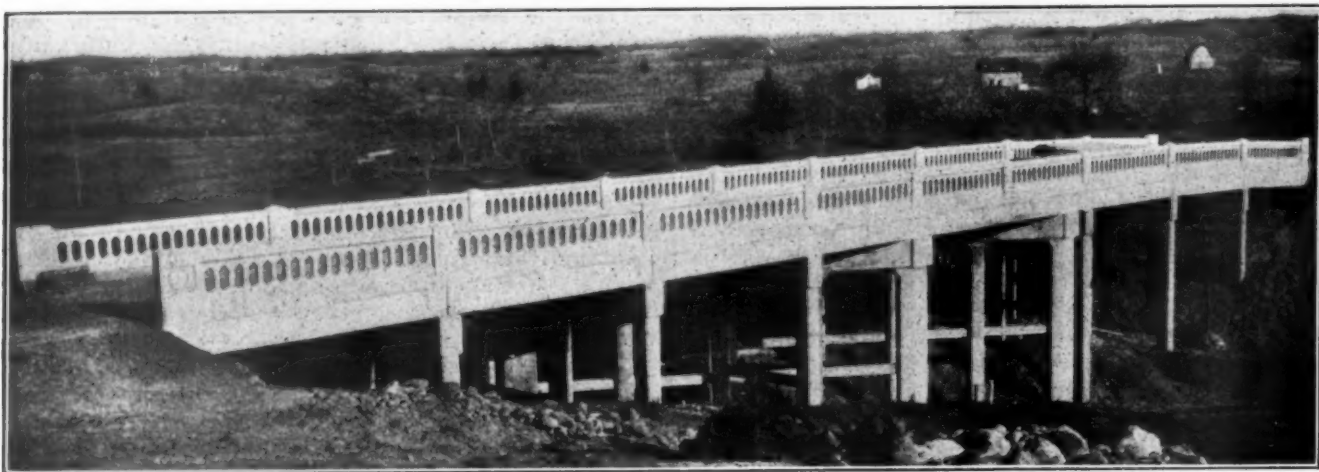
This favoritism of one agency might not of itself be so important to the public. If the interstate motor coach lines could vanquish all their competitors and still give the public as satisfactory service as it now receives and at no greater cost, then the matter would not need to be one of any selfish concern to the public. But such, it is evident, is not the case.

This is not to say that there is no justification for any interstate motor coach lines. There are many such lines which even the other carriers would freely admit ought to continue, in the interests of public convenience. But all should be made to stand up to the same measure applied to the other carriers. Their zone of maximum usefulness should be marked off for them as it is with other carriers. They should be kept within this zone and be expected to provide a high grade of service in it.

This is the attitude which has actuated a number of the railroads serving this area to petition the Interstate Commerce Commission for an early recommendation to Congress for a simplified form of regulation for interstate motor coach lines, pending the recommendation of more thoroughgoing legislation later. They point out that virtually all interests are agreed that some regulation for these lines is necessary. All the petitioners now ask is a simple requirement for a certificate of public convenience and necessity for such lines.

Curtailement of the present low-rate and comfortable service provided for commuters would not be pleasant for the public of this area to contemplate. Yet it is difficult to see how this outcome can be escaped unless remedial measures are taken very soon. We believe that civic organizations and public spirited citizens in the interested communities would express themselves unmistakably in behalf of such action as the railroads recommend, if they fully realized how serious the situation is.

The situation here described is local, yet it has its national implications. Similar problems are already present to some extent, at least, potentially, elsewhere. We are glad to see the railroads most seriously affected presenting their case so vigorously, yet fairly—asking no favors, but simply some measure of equality before the bar of public authority. Other sections of the country, and the railroads serving them will, we believe, be interested in watching the attitude of the public toward the problem which has now been presented in the New York - Philadelphia metropolitan district—this quite aside from whatever action the Interstate Commerce Commission may see fit to take on the petition.



One of the Grade Separation Structures Built on a Wisconsin State Trunk Highway in 1927

How Wisconsin Is Solving the Grade Crossing Problem

*A description of the manner in which this state is enlisting the co-operation of the railways**

By Harry D. Blake

Grade Crossing Engineer, Wisconsin Highway Commission, Madison, Wis.

IN the solution of the grade crossing problem highway, railway and public utility commission officers have been seeking an equitable method of procedure for many years. Conflicting interests have developed, however, and in the absence of any generally accepted plan the solution in many cases has been an order by the public utility commission which has reconciled the facts at issue to the extent permitted by the statutes in the particular state. The Wisconsin Highway Department has developed a plan of procedure based in part upon an apportionment of the increased construction cost brought about by the presence of the railway tracks, which appears to offer a reasonable and equitable solution of the problem and one that seems satisfactory to the public, the railways and public utility commission officers in that state. The progress made during the last year indicates that the plan is sound.

The average citizen has little patience with bells, signals, gates or watchmen, effective as they may be at times, but demands the removal of the grade crossing hazard in its entirety. During the long period of horse-drawn traffic many people came to believe that the railways in some intangible way were responsible for all of the crossing accidents and, consequently, should pay all or at least a major portion of the cost of improvements of this type.

The reaction of railway officers to this earlier viewpoint of the public no doubt has been much the same in all states. The highway engineer from necessity is forced to combine railway grade crossing improvements with longer road construction jobs in order to make funds available for the grade separation or traffic di-

version and frequently the crossings included have not been the ones considered most worthy of attention by railway engineers. The question of alleged benefits to the carrier when only 90 per cent or perhaps even less of the total motor traffic is diverted from a crossing has been met with the argument that so long as the grade crossing remains open, the hazard still remains.

A contention that the number and character of train movements rather than the volume of motor traffic should be taken as the controlling factor in determining the benefits to each has been presented on many occasions. A frequent source of dispute has been the demand of public officers that the railways participate in the cost of road construction adjacent to proposed separation structures, made necessary in the design of the highway to permit its safe operation when the separation might be effected by the substitution of steep grades, poor alinement and lessened vision for the motorist. This involves consideration of the question as to whether the railway track is to be accepted as a detail of topography or whether it is an extraneous feature, the existence of which causes the increased highway construction cost necessary to divert motor traffic from the crossing and toward which the railway company is required by statute to contribute in most cases.

What Crossings Should be Removed First

It is argued by many railway officers that the so-called dangerous crossings should be taken up first and the questions of approach grades, vision, highway and railway alinement adjacent to the existing crossing, character of surfacing, speed of trains, and many other factors, enter. It has been generally assumed in the past that the so-called wide open crossings in level coun-

* From an address presented before the Mississippi Valley Conference of State Highway Departments, January 26.

try with no obstruction to vision were to remain at grade perhaps indefinitely but with the rapid construction of a tremendous mileage of concrete pavement and the development of high speed through routes, railroad statistics show that 70 per cent of their crossing accidents occur in daylight, 63 per cent on the so-called wide open crossings, a large majority of them with motorists entirely familiar with the crossing, and from 25 per cent to 40 per cent brought about by motorists driving into the side of standing or moving trains. A study of these statistics shows that the highway departments and railway engineers must give consideration to the separation of the crossings where there is no railway cut or fill to assist, and it is obvious that this work will be expensive. In any event it is difficult to say which are the safe crossings.

Most railroads have insisted that grade crossing improvements must be financed in their entirety from operating income and that in asking them to contribute toward their cost the public must consider the earning capacity of the line and the responsibility of the railway officers to their stockholders. This method of financing work of this nature is at least open to argument and a subject for serious study on the part of both the railways and the public. Problems presented by the development of tributary roads which utilized crossings previously avoided by a relocation of the main trunk and many other questions of a similar nature have been interposed to complicate the situation and make more effective the claim that the advantage to the railway is temporary at best and that the real beneficiary is the motorist who should pay the major portion of the bill.

At the same time, in fairness to the railroads, we must remember that when their tracks were laid they were located to conform with conditions of that time. Legislation, court decisions and precedent were formulated during the long period of horse-drawn traffic, and it is but fair to assume that the railways could not foresee the tremendous development of motor traffic that has occurred in the last 20 years. The responsibilities of the railway corporations to the public, however, are quite clearly set forth in the statutes in the various states and to these laws both parties at interest must conform.

With the development of motor transportation during the last few years, the attendant rapid increase in crossing accidents has concentrated the attention of the public more and more upon the grade crossing. In the summer months scarcely a day passes without the papers carrying an account of one or more such accidents, with the attendant record of casualties, suffering and financial loss. Gradually the average citizen has come to realize that the only sure way to prevent a recurrence of the tragedies is to get rid of the crossings. While perhaps highway and railway officers appreciate more fully the problems of this work, the public thinks only in terms of the results it wants accomplished, and, as a rule, is willing to leave to its engineering representatives the problem of working out the solution. This attitude was well exemplified in Wisconsin when the last legislature passed almost unanimously a bill setting aside \$100,000 to assist in financing the public's share of grade crossing work on the state trunk highway system.

Railway officers can see that they are confronted by hostile public opinion that demands the elimination of all grade crossings. In some states the public utility commission or the legislature has laid down fixed percentages of apportionment, many on the basis of an equal division of the cost of the bridge and approaches. This plan is not applicable to highway relocations made

to divert motor traffic from the grade crossings and while it can be applied to separation projects many of the improvements of this type are combined with changes in the location of the highway which cause increased expense to the public. In general, railway officers believe that many of the apportionments are unfair to their companies, and while they accept the ones forced upon them, there is little enthusiasm on their part and operations are confined to comparatively few crossings. As the larger railways have thousands of grade crossings, with more being opened every day, it is not at all surprising that their officers hesitate to embark on a comprehensive plan for crossing elimination which they feel might mean bankruptcy to their roads if carried to its ultimate completion.

The Railway Viewpoint

Leaving out of consideration for the present the various minor factors that arise in the individual cases, the major demands of the railways may be summed up as follows:

1. A reduction in the railway's share of the cost to 25 per cent, which they consider a reasonable figure.
2. The closing of the maximum number of grade crossings.

Railway engineers have given this question careful and serious thought, both as individuals and through the medium of their engineering organizations, and different solutions have been proposed. Some feel that the federal aid highway act should be amended so that a specific allotment would be made to each state for grade separations, the cost of this work to be divided 50 per cent federal money, 25 per cent state money, and 25 per cent to be paid by the railway. While it was clearly the purpose of Congress to aid in the removal of the grade crossing hazard, there is nothing in the law to indicate that this phase of the work was to take precedence over the construction of a surfaced and maintained highway system. Since the passage of the federal aid act and before, the grade crossing problem has been given serious consideration by the state departments, but the highway engineer, faced by a public clamor for more and more hard surfaced roads, has been forced from necessity to use the public funds for that purpose, and, as a result, has until recently accepted only such crossing improvements as could be built at a relatively low cost. While the public is now insistent in its demand for the elimination of the grade crossing, this group of highway officers will no doubt agree that the construction of the federal system has not yet reached that stage of completion where the proposed amendment will find support in Congress for some time to come.

The second requirement presents a serious problem. The highway transportation system, owned and operated by the public, comprises some 2,862,197 miles of roads, of which perhaps 200,000 miles represents state or federal trunks. It has been suggested that the highway system should be properly correlated between trunk and feeder lines, the unnecessary branches being lopped off wherever their economic necessity cannot be shown, this work to be delegated to a properly qualified state authority functioning through state utility commissions who, in turn, should be required to work through a national authority associated with the Interstate Commerce Commission with respect to public policy in the production of safe and convenient highway transportation. Such a plan, if it could be put into effect, would permit the closing of many town road crossings, but many of the retirements would involve the inherent

right of individual property owners of access to a public highway, and if many existing crossings were closed considerable sums would be necessary to build the connecting roads. Just where these public funds would come from is not clear. While the Interstate Commerce Commission controls both the receipts and the disbursements of the railroads, it is not probable that it would display very much enthusiasm over the plan proposed, and it is questionable whether Congress would feel that public opinion would support such a change. In fact, the tendency is in the other direction and without a doubt a few more years will see all of the states in complete control of the main roads, the counties controlling the subsidiary trunks, and the local townships handling their own problems in their entirety. Some of the states have laws which have made possible a reduction in the number of grade crossings over a period of years but in those states with large areas of developing country this is very difficult. There is no doubt that in many states laws should be passed which would more fully support the utility commission and make the closing of existing crossings easier and the opening of new ones more difficult, and to accomplish this every highway department should give its support.

There is one point and perhaps only one upon which the officers of both sides agree, and that is that the apportionment of the cost of grade crossing improvements shall be in proportion to the benefits received by each. To the speaker's knowledge, however, no generally accepted method of determining these benefits has ever been developed, and in practice, each case is considered separately as it comes up, with the ever-recurring arguments over the alleged benefits to each. No matter how carefully the plan of determining the benefits is reduced to a mathematical basis, assumptions must be made at the starting point, and it is over these assumptions that the arguments begin.

A Definite Program Is Necessary

At the end of the 15 or 20 years of what may be termed experimentation that have elapsed during the development of the motor vehicle, there are few states and few railroads that have programs for the future in grade crossing work. With most of the cheaper relocations and separations complete on the state roads, the time has come when a solution of the greater problem that now confronts us must be developed. With the rapid increase in the number of automobiles, the concentration of tremendous sums of money for highway improvements, and an irresistible demand on the part of the public for the elimination of grade crossings, it is the contention of the Wisconsin department that the problem is squarely before the managements of the railways and that they must provide for its solution in their underlying financial structure and not from operating revenue alone. A large part of the crossing accidents occur at rural crossings on the state system of highways and with the track elevation work in the larger cities must come the grade separations on the state roads as they carry the larger volume of traffic. These separations will come first and if a satisfactory and equitable method of procedure can be developed, no doubt it will be followed by the utility commissions and public officers in handling town, village and city crossings as they come up in the future. Whatever the solution is to be, it must be worked out in a comprehensive way for without a doubt the next 10 years will see the public demanding and securing the separation of a large part of the crossings on the main high speed trunk lines, with automatic protection for the few that must remain.

The existing federal statutes provide no method of procedure or plan of apportionment for grade crossing improvements, and with the wide variation of the laws on the subject in the various states it is obvious that under the existing conditions each one will have to work out its own solution. At the end of 15 years of endless argument and litigation, with traffic diverted from only 193 crossings on the state trunk highway system in that time, at a cost to the railroads of about \$1,480 per crossing and with the more expensive separations to come, the Wisconsin department decided that the grade crossing problem was fast becoming an example of the irresistible force and the immovable body.

The Method of Procedure Adopted

A careful study of the situation seemed to indicate that several essential elements were lacking in the general method of procedure employed. While the positions assumed by the parties at interest were diametrically opposite, it was felt that the problem was probably no more difficult of solution than many others encountered in the administration of the highway laws if the situation were approached by both sides with the idea of sincere co-operation.

It is believed that all too frequently the policy of our department has been to decide what is to be done and then to advise the railway of the decision and notify it of the amount to be paid. Railway engineers are intensely interested in the grade crossing problem and it is felt that they should be called in at the beginning and their advice and counsel secured in working out the plan of procedure.

In the second place, there seemed to be no accepted plan of procedure or method of cost apportionment that could be applied to the average case in attempting to arrive at the final apportionment of cost. As a result, each new problem as it came up resolved itself into a struggle to balance assets and liabilities on each side, and the result was a gamble. The Wisconsin group decided that 15 years of experience had convinced them that the method commonly employed of attempting to agree upon the benefits to the two parties in each case had not proven wholly successful, and that a much better solution of the difficulty seemed to be to agree with the railway officers, if possible, upon the percentages to be applied to the average case, these same percentages then to be applied to all cases, a uniform result being produced by the law of averages.

A Co-operative Plan Was Formulated

It was felt that if the plan could be put into tangible form the problem would work out through the co-operation of the railway officers and to that end a conference of the chief engineers of the principal railroads operating in the state was called at the office of the Wisconsin Highway Commission. At this conference, the Railroad Commission was represented as well as the railways. When the group assembled they were told that the Wisconsin department felt that \$1,000,000 per year expended to cover the increased cost of work of this character would remove the larger part of the 758 crossings still remaining on the state trunk highway system in a ten year period, and their co-operation was asked in the necessary work. Feeling that there is a well concerted demand for the immediate removal of the grade crossing hazard and that the problem before responsible officers is not so much to determine who shall pay the last dollar of the bill as to develop some method which will produce results, the following plan of procedure was presented.

The arrangement, as worked out, is co-operative to

the extent permitted by the statutory allotment of highway funds. The crossings to be improved are selected, if possible, after conferences with railway officers and the plan of approach developed jointly with them and with the engineers of the Railroad Commission. It is believed that this method will prove helpful in interesting railroad engineers in the problems of the highway organization. Compromises, of course, are necessary, both in the location of improvements and in methods of procedure, but both parties are working toward the same general result.

In the financial plan presented it was agreed by the highway engineers that if the crossing hazard did not demand attention, the public would have to pay for the construction of the road in the existing location with the exception of that portion of it on the railroad right of way, the cost of which is assessable against the company by statute. It is felt that the railways should only be asked to participate in that portion of the cost of the improvement which is made necessary by the effort to avoid the crossing hazard. Surveys are made and estimates prepared for the proposed relocation or separation, as the case may be, and also for the improvement to the same standard of the existing road which crosses the railway at grade. Where separation structures, extremely heavy grading, or right of way costs on relocations are involved, it is obvious that it will cost more to build the new road than to improve the old one at grade. The costs are determined between points common to both the old road and the new, and the difference between these two quantities is termed the increased cost. Many railways, however, cross the highways in a diagonal direction and it often develops that a road can be built along the track between two crossings with a material shortening in distance and, consequently, at a reduced cost. In such cases there is no increased cost and the railway is not asked to participate. It is thought that the increased cost caused by the presence of the track is a better measure of the financial responsibility of the railway than any plan heretofore developed. In those special cases where a separation structure is required on a highway newly opened, with no existing road handling the traffic, or where there is an existing structure that must be widened or altered to accommodate a modern highway, the total cost of the bridge and approaches or of the altering is used as the apportionable item.

Field inspections are made of each situation by railway engineers, accompanied by a representative of the Highway Commission, and, if possible, a plan of procedure is decided upon at that time. It has been found that it is more satisfactory for the railway to handle the design and construction of structures that are to carry their own traffic, the Commission to do the same with structures to carry the highway over the railroad. All work, both railway and highway, is done by contract, if possible, an exception being necessary, of course, with projects involving the lowering or raising of tracks, the construction of falsework, the placing of girders, or the rebuilding of existing railroad bridges.

The matter is presented to the railway in a formal way by giving it a layout plan which shows all the factors of interest to both parties. This is accompanied by a preliminary statement of cost apportionment which assembles the work of both groups of engineers and shows what the probable apportionment of cost will be. If this seems satisfactory, an agreement is drawn up between the railway and the Commission, which is later submitted to the Railroad Commission for approval. No fixed sums are used in this agreement except in those cases where the railway does work with company

forces. When the railway force account work exceeds \$10,000 or \$15,000, the quantities to appear as part of the apportionable cost are agreed upon each day and the fixed sum method is not employed. Payments are based on measured quantities and contract unit prices, each party having the privilege of checking the work of the other, all books of record being open to both parties.

The quantities on the new route can, of course, be determined as the work progresses, but to avoid dispute the quantities on the old road are taken from the preliminary estimate above referred to and inserted in the agreement. The unit prices to be used in determining the deductible old road cost are the same for the new road construction. At the time of settlement, the estimate is set up on the basis of final agreed measured quantities and contract unit prices, and payment made by one party to the other to bring about the agreed result.

With the firm conviction that the interests of the public require the removal of the grade crossings as rapidly as possible and on the agreement of the railway company to waive their many objections and to provide funds for a well defined program of improvements, it has been decided, for the time being, to apportion the item of increased cost 40 per cent to the railway and 60 per cent to the state.

The First Year's Results

This plan has been in operation for a full construction season and with the exception of one Class I railway the officers are co-operating to the fullest extent. In the earlier years of the good roads movement, grades were separated and highways relocated to avoid crossings only at those points where the expenditures would not be heavy. During the period of prosperity immediately following the war, it was possible to attack a few of the more expensive separations but, as a rule, they were avoided. All of the railways of Wisconsin are primarily grain-carrying roads and during the years of poor crops and agricultural depression the companies have resisted proposals that involved any considerable sum of money, for they felt that the roads would be forced to assume a share of the cost that they did not think was fair. It is interesting to note that in the period from 1915 to 1925, state trunk highway traffic in Wisconsin was diverted from 193 grade crossings. This was accomplished by constructing 15 separation structures and relocating the highways so that 37 crossings were closed, the remainder being avoided. The railway companies contributed about \$100,000 toward the portion of this work that included separation structures and \$176,000 toward the cost of the highway relocations to divert traffic from the crossings. In addition, \$12,000 of railway money was used to assist in the reconstruction of existing bridges to make them satisfactory for motor traffic. In all, \$288,000 was furnished by the railways in this ten year period, or an average of \$1,500 per crossing.

The 1926 construction season was entered with agreements in effect that in the end netted the public \$3,200 for the 18 crossings included in that year's program, or \$177 per crossing. Faced with the ultimate construction of hundreds of expensive separations and relocations it seemed obvious that some method of procedure had to be worked out that would take the motor traffic off the crossings at a more rapid rate and with the co-operation of the railway officials, if possible.

The plan, as outlined in this paper, was entered into in the fall of 1926 and while it is not all-inclusive it does offer a solution and a definite plan of procedure to be applied to the individual cases as they come up where

grades are separated or a major portion of the motor traffic is diverted from the crossings. While the Wisconsin statutes are so written that the crossings must be taken up in connection with road construction projects as they arise and the department has little direct authority in the location of these projects, the recent legislature provided \$100,000 for grade crossing work, to be located at the option of the Highway Commission, and several difficult and expensive separations can be carried out each year at locations satisfactory to the Highway Commission and the railroad companies.

Owing to the fact that it is very difficult under the Wisconsin laws to enclose a grade crossing if private interests are involved, the railways were asked to waive their objections to the retention of the crossing at grade if a major portion of the traffic were removed. It is now generally conceded that the liability of accident at a grade crossing is dependent upon the number of trains and motor vehicles combined and that while the rail traffic may be light on some lines, the companies have been asked to consider their state trunk highway crossing problem as a unit, each crossing avoided for state trunk highway traffic being one step nearer the final objective. The increased cost plan practically eliminates the objection of the railroad engineers to participation in the cost of road work adjacent to the structures for the same safety standards are applied to the old road as to the new and any extra cost is obviously brought about by the presence of the track and the effort to eliminate the crossing. With the existing statutes requiring railroads to assist in improvements of this character, it necessarily follows that the railway must be considered as the cause of the extra expense and the increased cost of the road work caused by the presence of the track becomes the logical basis of apportionment. The plan is not perfect by any means. In fact, it has very definite limitations but it does seem to offer an equitable method of procedure and one to which the railway companies are willing to subscribe and set up funds for a definite grade crossing elimination program.

Work for Next Summer

Under the plan and with the co-operation instead of the objection, resistance and refusal of the railway engineers, traffic was taken from 37 state trunk highway crossings in 1927, at a cost to the railroad of \$74,500. The increased cost of this work over that of building the old road at grade was about \$242,000. Five separation structures were involved, the remaining expenditures being in connection with relocations of the highway to divert traffic. These projects were opened to travel and other jobs are under way which will be partially financed with \$97,400 of railway money and additional agreements are in effect under which the roads will pay \$45,300. In the last year the railroads have agreed to pay \$217,200, or about 75 per cent of the total amount secured in the ten years preceding, after endless arguments, litigation and delay. There is also a Railroad Commission order outstanding, assessing \$80,000 against one railway. In addition to the \$142,000 under agreement and the \$80,000 provided by the Railroad Commission, the Highway Commission will ask the railways for at least \$275,000 for other improvements to be built in 1928 and we believe it will be furnished by the companies. This, of course, involves several expensive separations. It is felt at this time that well over a million and a quarter dollars will be expended next summer in the elimination of 52 crossings on the state trunk highway system in Wisconsin.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading during the week ended February 18, in which February 12 was more or less generally observed as a holiday, amounted to 887,891 cars, a decrease of 66,903 cars as compared with loading in the corresponding week of last year and of 44,390 cars as compared with 1926. Loading of livestock was larger than a year ago but other commodity classification totals showed decreases. Coal loading amounted to 157,036 cars, as compared with 213,495 cars in the corresponding week of last year. Loadings by districts, except the Northwestern, were smaller than a year ago. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, February 18, 1928			
DISTRICTS	1928	1927	1926
Eastern	199,853	221,094	216,155
Allegheny	177,365	196,533	189,115
Pocahontas	50,138	56,256	53,496
Southern	143,147	155,971	154,438
Northwestern	117,100	116,442	116,439
Central Western	128,839	133,984	128,782
Southwestern	71,449	74,514	73,856
Total Western Districts	317,388	324,940	319,077
Total All Roads	887,891	954,794	932,281
COMMODITIES			
Grain and Grain Products	41,188	42,221	42,928
Live Stock	31,644	27,507	27,054
Coal	157,036	213,495	169,913
Coke	10,675	12,496	17,627
Forest Products	68,209	68,824	77,451
Ore	8,183	10,399	10,006
Merchandise L. C. L.	248,974	252,859	255,822
Miscellaneous	321,980	326,993	331,480
February 18	887,891	954,794	932,281
February 11	906,009	962,602	917,625
February 4	926,204	965,664	914,491
January 28	902,832	943,879	925,696
January 21	884,095	936,643	921,643
Cumulative total, 7 weeks	6,167,827	6,639,720	6,451,093

The freight car surplus averaged 369,469 cars during the period ended February 8, as compared with 403,792 cars on January 31. The total included 161,005 box cars, 157,877 coal cars, 23,185 stock cars and 14,343 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada during the week ended February 18 totaled 64,611 cars, a decrease from the previous week of 1,317 cars but an increase of 4,651 cars over the same week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
February 18, 1928	64,611	41,421
February 11, 1928	65,928	41,628
February 4, 1928	64,971	39,571
February 19, 1927	59,960	40,799
Cumulative Totals for Canada		
February 18, 1928	439,340	260,431
February 19, 1927	414,615	257,373
February 20, 1926	385,979	243,357

THE UNION PACIFIC broke all its previous records for safety in operations in 1927 when injuries to employees were 3.44 per million man hours worked as against 4.73 in 1926—a reduction of more than 27 per cent. The 1926 rate was itself the lowest that had been achieved by the company up to that time. During 1927 there were no fatalities and only 16 personal injuries to passengers. This was at the rate of 0.017 per million passenger miles, which means that a passenger before receiving an injury would have had to travel 2,400 times the distance around the world before receiving an injury.

Seventy-Ton Gondola for C. & I. M.

New features incorporated in 350 cars designed for use in Chicago coal trade

THE Chicago & Illinois Midland has recently placed in service 350 all steel gondolas of 70 tons capacity each, built by the Pullman Car & Manufacturing Corp., and embodying a number of interesting features including unusually low center of gravity, provision for easy repairs, and clearances sufficient to permit using the cars in unloading or dumping machines.

The cars, purchased to assist in handling the increasing coal business of the Chicago & Illinois Midland in Chicago territory, are designed with sufficient clearances so that they can be unloaded in car dumping machines, being adaptable, therefore, to unloading by hand, clam shell, or car dumper. Owing to the use of floors sloping toward the center of the car and the fact that the body is low hung, the car has a low center of gravity conducive to easy riding and yet not low enough to induce undue rail or flange stress. While suitable for any other lading commonly handled in open top cars, these gondolas are expected to remain in the coal service, returning to the coal fields promptly after being unloaded and thus assuring a good average daily mileage.

The cars are designed for long life and easy repairs. All steel except the forgings is of copper content to provide resistance to corrosion, the price differential of the higher grade steel not exceeding the cost of keeping cars out of service for one 30-day period on a per diem basis. The center sills and both ends are fully protected by the floor sheets, with the central portion only partly exposed to the elements or lading. The floor and side sheets can be removed without disturbing the center sill cover plate or main side stakes. Intermediate side stakes are riveted to the side sheets on the ground and applied with the sheets to the car. To as large an extent as possible, all parts are made accessible for easy inspection.

Another feature of the new C. & I. M. gondola is the fact that large capacity is secured without excessive height due to placing the side stakes on the inside and thus making possible the location of the side sheets about 8 in. further apart than usual. The tops of the side sheets are offset and flanged and double-riveted to give strength and increased capacity. Offsets at the car ends are provided for the application of ladder and grab irons without exceeding the clearance limits.

Particular attention was paid to painting, the cars

being thoroughly cleaned by sand blasting and immediately primed with one coat of Continental car cement. An additional heavier coat was applied later, the underframes also receiving this treatment. A coat of shellac is applied under the stenciling to keep the letters from turning yellow. The car is painted on the outside only, but will be painted inside after six months' service to fill the corners and protect connections and braces.

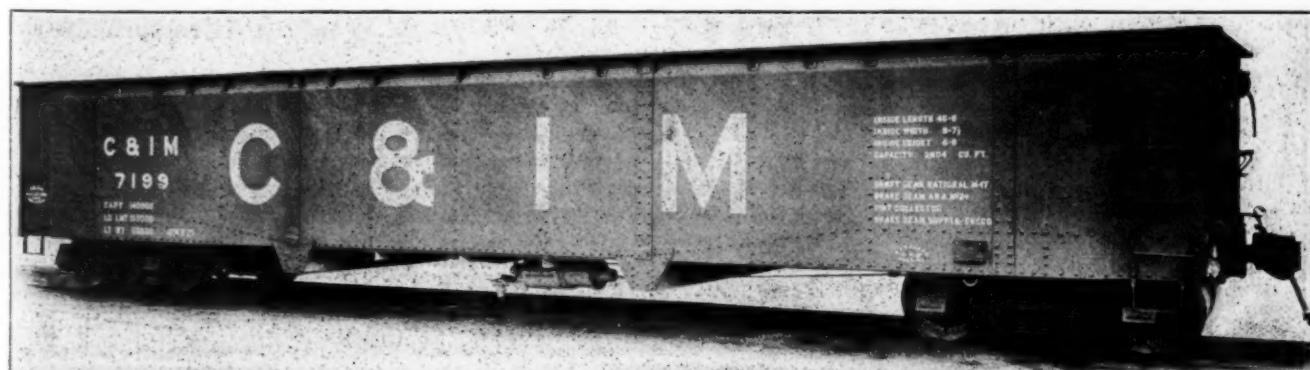
General Description

The new gondola is of the tight bottom type. The underframe is built up of channel center sills, angle side sills, angle end sills, angle diagonal braces, pressed pan bolsters, with top and bottom cover plates, two channel crossbearers, four pressed cross ties and three bulb angle cross ties and floor supports. The floor is made of 5/16-in. plates arranged to form a well extending from side to center sill and between the cross ties next to the bolster. The side frame consists of 3/4-in. side sheets pressed inward at the top to connect with the bulb angle side top chord. There are seven bulb angle inside side stakes, and four pressed inside gusset stakes with angle connections on each side of the car. Ends are Murphy corrugated with bulb angle top chords. The trucks are cast steel of the Dalman type with integral journal boxes and cast steel bolsters. The general dimensions of the car are as follows:

Length inside	46 ft. 6 in.
Length over strikers	48 ft. 1/4 in.
Width inside	10 ft. 2 1/2 in.
Width over side top chords	10 ft. 3 1/2 in.
Height inside	5 ft. 6 in.
Height rail to top of side top chord	8 ft. 11 5/16 in.
Height rail to top of floor	3 ft. 5 5/16 in.
Height rail to body center plate	2 ft. 1 3/4 in.
Truck centers	38 ft. 1/2 in.
Truck wheelbase	5 ft. 8 in.
Truck bearing centers	4 ft. 2 in.

In order to secure test data under actual service conditions, a number of specialties are being tested on these cars.

For example, while Klassing hand brakes are being used on 335 cars, 3 groups of 5 cars each are equipped with the following brakes: Konker with universal ratchet, Jemco with universal ratchet, and Universal booster and ratchet. National M-17 draft gears are furnished on 315 cars, 5 cars each being equipped with the following gears: Cardwell G-125-AA special, Westinghouse N-11-A, Bradford R-1-A, Miner A-79-



New High Capacity Gondola for Chicago & Illinois Midland

X, Murray H-28, Waugh-Gould No. 400, and Sessions Type L. The cars are equipped with chilled tread 850-lb. car wheels; Barber lateral motion device, using drop forged spring caps and rollers; also Barber single roller side bearings. The brake pipe, located between the center sills, is secured at crossovers with train line anchors furnished by the Illinois Railway Equipment Company.

The car, which conforms in all respects with the A. R. A. requirements, was designed jointly by E. O. Thedens, master car builder of the C. & I. M., and the engineering staff of the Pullman Car & Manufacturing Corp.

"Graphic" Cases Reduce Car Delays

THE Canadian Pacific has installed two "graphic" cases for checking cars, one at the local freight office and the other at the yard office at Winnipeg, Man. The use of these cases has resulted in decreasing the number of delays to cars in the terminal, particularly foreign cars and cars of perishables, with large accompanying per diem savings. In addition, they are labor saving devices since one clerk can operate each case with ease, as compared with two clerks formerly employed to keep track of the cars by the ledger system.

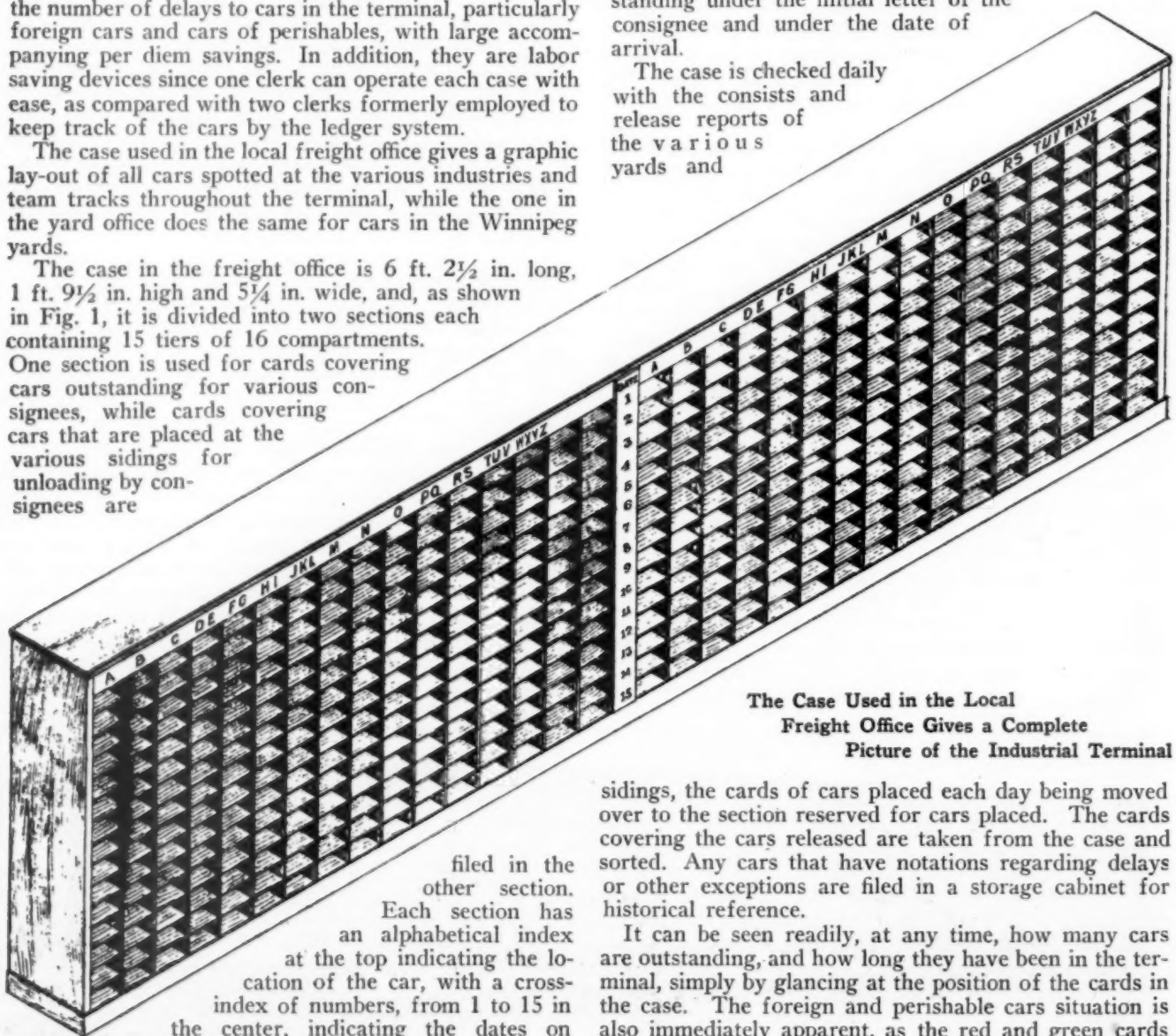
The case used in the local freight office gives a graphic lay-out of all cars spotted at the various industries and team tracks throughout the terminal, while the one in the yard office does the same for cars in the Winnipeg yards.

The case in the freight office is 6 ft. 2½ in. long, 1 ft. 9½ in. high and 5¼ in. wide, and, as shown in Fig. 1, it is divided into two sections each containing 15 tiers of 16 compartments. One section is used for cards covering cars outstanding for various consignees, while cards covering cars that are placed at the various sidings for unloading by consignees are

ed from 16 to 31 are hung on these hooks over the stenciled numbers, thus serving as a daily index for the last half of the month. By this means, the height of the cabinet is cut in half, speeding up the work, since the operator does not have to stand to reach the top compartments. The last two tiers of compartments in each section are not lettered. These are used, in the first section, for cards covering perishable freight, and in the second section for "hold track" cards and miscellaneous.

The train arrivals on all cars are made out by the conductors enroute and filled in as to consignees, sidings, etc., by train clerks at the yard, giving the car initials and numbers, points of origin, contents, consignees, and time and date of arrival. Copies of these arrival lists are forwarded by messenger to the local freight office, where they are delivered to the clerk in charge of the graphic case. He places them in their time order of arrival and marks a folio number on each sheet for recording purposes. Then he makes out a card, as shown in Fig. 2., for each car that is to be disposed of locally, using white cards for C. P. cars, red cards for foreign cars and green cards for all cars of perishables. These cards are then filed in the section set apart for cars outstanding under the initial letter of the consignee and under the date of arrival.

The case is checked daily with the consigns and release reports of the various yards and



The Case Used in the Local Freight Office Gives a Complete Picture of the Industrial Terminal

sidings, the cards of cars placed each day being moved over to the section reserved for cars placed. The cards covering the cars released are taken from the case and sorted. Any cars that have notations regarding delays or other exceptions are filed in a storage cabinet for historical reference.

It can be seen readily, at any time, how many cars are outstanding, and how long they have been in the terminal, simply by glancing at the position of the cards in the case. The foreign and perishable cars situation is also immediately apparent, as the red and green cards show up distinctly among the white cards. This enables efficient supervision at all times, as any delays show up at once.

filed in the other section. Each section has an alphabetical index at the top indicating the location of the car, with a cross-index of numbers, from 1 to 15 in the center, indicating the dates on which the cars were placed for loading or unloading. Small hooks are placed above these numbers and, after the first of the month, circular discs number-

The case also serves as a valuable reference in supplying information to the consignees as to their cars, and the location of any car for any particular consignee may be found, even when the consignee does not know the car number. Since the system has been in effect, it has reduced delays in placing cars and facilitated unloading, besides preventing any cars from being lost

8-18-27-18668	
Car No. _____	Init. _____
Consignee _____	
From _____	
Contents _____	
Arr. _____	Notified _____
Placed _____	
Released _____	
Pro. No. _____	
REMARKS	

Replica of the Car Cards Used in the Cases

temporarily, as sometimes happens in a large terminal.

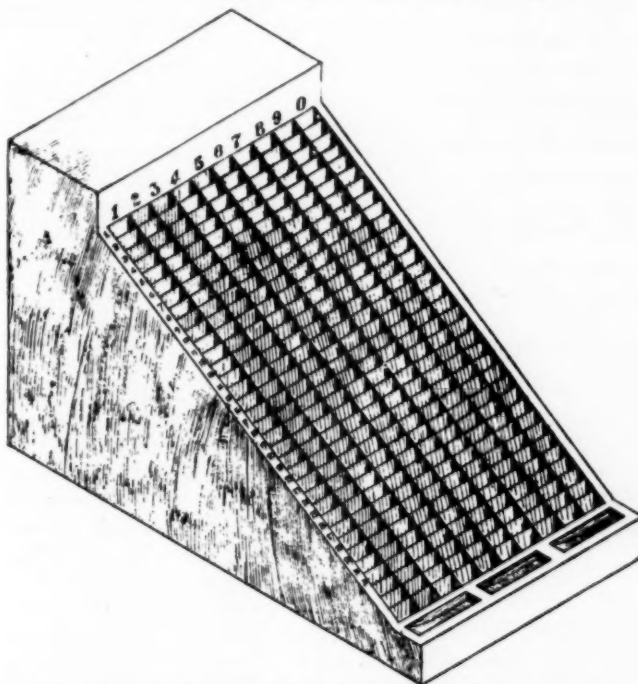
The case used in the yard office is somewhat smaller. It operates on a similar principle, except that the index across the top consists of numbers instead of letters, as shown in Fig. 3, the cards being filed in accordance with car numbers and date of arrival, instead of consignees' initials as in the other case.

Conductor Delivers Form

Upon the arrival of each train in the Winnipeg yard, the conductor delivers to the yard office a form giving the full details as to every car on his train. The clerk in charge of the case goes through these train arrival forms and makes out white cards for all foreign cars arriving for local delivery and red cards for all foreign empties arriving for local loading. A list is taken of all foreign cars containing through loads and all empties enroute home.

This list is checked with train departures and if the cars do not depart within 24 hours, red cards are made out and filed in the case.

The case is checked daily and each car for local delivery which has been in the terminal for more than three days is located, and its location is shown on the card. If the car is in the process of unloading, the card



The Yard Office Case Resulted in Per Diem Savings

is filed again but, if not, the yardmaster's attention is drawn to it and steps are taken to correct the situation. The details of any delays are shown on the face of the cards. The cars indicated by red cards, consisting of through loads and empties in the terminal more than 24 hours and empties to be loaded, are checked daily, and all delays are reported to the yardmaster for action. The details of this are also shown on the face of the card.

As soon as a car leaves the yard, its card is removed from the case. If there has been no delay, the card is destroyed, otherwise it is kept in a reference file for 12 months.

The use of this case has resulted in material savings in per diem, the average time of foreign cars in the terminal for unloading having been reduced to 4.5 days.

* * * *



A Portland-Worcester Train on B. & M. at Ayer, Mass.

1927 Orders for Rail Motor Cars

ON page 106 of the January 7, 1928 issue of the *Railway Age* there appeared a table showing in detail the orders placed during 1927 for rail motor cars by the railroads in the United States and

Canada and also orders placed with American builders for export. The incompleteness of certain of the information in the early reports on which this table was based, has proved to be misleading and the entire table is, therefore, being reprinted, incorporating the complete information as to builders and additional details concerning some of the cars.

For Service in the United States

Purchaser	No.	Motor or trailer	Type of power plant	Horse-power	Seating capacity	Length of bagg. compt. Ft. In.	Weight	Builder
Alaska	1	Motor	Gas-Electric	250	26	25 0	92,100	J. G. Brill Co.
Atchison, Topeka & Santa Fe....	1	Trailer	.....	60	.....	.....	54,000	J. G. Brill Co.
.....	1	Motor	Gas-Electric	275	76	11 2	110,000	J. G. Brill Co.
.....	2	Motor	Gas-Electric	275	77	8 3	108,000	Electro-Motive—St. Louis
Baltimore & Ohio.....	17	Motor	Gas-Electric	250	71	.....	90,000	J. G. Brill Co.
.....	1	Trailer	.....	.....	.....	.....	.....	J. G. Brill Co.
Boston & Maine.....	1	Motor	Gas-Electric	190	50	11 3	65,000	J. G. Brill Co.
Central Vermont.....	2	Motor	Gas-Electric	250	51	14 11	92,400	J. G. Brill Co.
.....	1	Trailer	.....	.....	50 10	.....	57,800	J. G. Brill Co.
Chicago & Alton.....	2	Motor	Gas-Electric	275	12	31 3	104,000	Electro-Motive—St. Louis
.....	2	Motor	Gas-Electric	275	24	25 5	104,000	Electro-Motive—St. Louis
Chicago & North Western.....	3	Motor	Gas-Electric	250	40	16 8	99,500	Electro-Motive—Pullman
.....	1	Motor	Gas-Electric	275	40	16 8	107,000	Electro-Motive—Pullman
.....	5	Motor	Gas-Electric	550	.....	34 0	135,000	Electro-Motive—Pullman
Chicago, Burlington & Quincy....	2	Motor	Gas-Electric	275	12	27 0	106,000	Electro-Motive—St. Louis
.....	2	Motor	Gas-Electric	275	.....	40 0	106,000	Electro-Motive—St. Louis
.....	4	Motor	Gas-Electric	275	28	28 0	108,000	Electro-Motive—St. Louis
.....	4	Motor	Gas-Electric	275	57	26 0	108,000	Electro-Motive—St. Louis
.....	5	Motor	Gas-Electric	275	40	25 0	109,000	Electro-Motive—Pullman
.....	9	Motor	Gas-Electric	275	25-32	25-29	112,000	Electro-Motive—Pullman
.....	7	Motor	Gas-Electric	275	.....	40 0	104,000	Electro-Motive—Pullman
.....	10	Motor	Gas-Electric	275	53-77	24 0	113,000	Electro-Motive—Pullman
Chicago, Milwaukee & St. Paul..	1	Motor	Gas-Electric	275	43	.....	98,000	Electro-Motive—Pullman
.....	5	Motor	Gas-Electric	275	44	23 3	110,000	Electro-Motive—Standard Steel
Chi., St. Paul, Minn. & Omaha..	1	Motor	Gas-Electric	275	44	12 0	111,000	Electro-Motive—Pullman
.....	1	Motor	Gas-Electric	275	57	16 0	.....	Electro-Motive—Pullman
Chicago, Springfield & St. Louis..	1	Motor	Gas-Electric	275	80	8 9	.....	Electro-Motive—Pullman
.....	1	Trailer	.....	190	50	11 3	54,900	J. G. Brill Co.
Columbus & Greenville.....	1	Motor	Gasoline	.....	.....	50 10	46,000	J. G. Brill Co.
.....	1	Trailer	.....	.....	.....	.....	.....	J. G. Brill Co.
Denver & Rio Grande Western..	1	Motor	Gas-Electric	200	40	19 1	76,000	Railway Motor
East Broad Top.....	1	Motor	Gas-Electric	250	12	24 0	93,700	Company Shops
Frankfort & Cincinnati.....	1	Motor	Gas	70	26	14 9	30,000	J. G. Brill Co.
Great Northern.....	1	Motor	Gas-Electric	275	36	17 7	.....	Brill—Westinghouse
.....	1	Motor	Gas-Electric	275	32	25 5	99,800	Electro-Motive—St. Louis
Lehigh & New England.....	1	Motor	Gas-Electric	250	81	.....	94,000	J. G. Brill Co.
Lehigh Valley.....	1	Motor	Gas-Electric	440	21	22 6	132,000	Electro-Motive—Osgood Bradley
.....	1	Trailer	.....	.....	78	.....	63,920	Standard Steel
.....	1	Motor	Gas-Electric	440	21	37 8	132,000	Electro-Motive—Bethlehem Steel
.....	1	Trailer	.....	.....	78	.....	63,920	Bethlehem Steel
.....	1	Motor	Gas-Electric	550	26	34 9	137,500	Bethlehem Steel
.....	1	Trailer	.....	.....	78	.....	59,400	Am. Car & Foundry—Brill
.....	1	Motor	Gas-Electric	.....	.....	.....	.....	Am. Car & Foundry—Brill
.....	1	Motor	Gas-Electric	220	52	11 0	81,000	J. G. Brill Co.
Long Island.....	1	Motor	Gasoline	68	43	13 10	36,340	Electro-Motive—St. Louis
Mobile & Ohio.....	2	Motor	Gas-Electric	440	27	20 0	128,860	Electro-Motive—St. Louis
.....	1	Motor	Gas-Electric	220	40	16 6	97,700	Electro-Motive—St. Louis
.....	2	Trailer	.....	.....	78	.....	59,920	J. G. Brill Co.
New York Central.....	6	Motor	Gas-Electric	250	40	17 6 1/2	116,500	J. G. Brill Co.
.....	1	Motor	Gas-Electric	250	74	13 11 1/2	112,000	J. G. Brill Co.
.....	1	Motor	Gas-Electric	500	69	13 11 1/2	135,000	J. G. Brill Co.
.....	3	Motor	Gas-Electric	440	39	17 4	127,150	Electro-Motive—Osgood Bradley
.....	1	Motor	Gas-Electric	275	74	13 11 1/2	115,000	American Car & Foundry
.....	2	Motor	Gas-Electric	550	31	22 4	139,500	American Car & Foundry
New York, New Haven & Hart..	6	Motor	Gas-Electric	300	58	22 8 1/2	123,400	Standard Steel
Northern Pacific.....	1	Motor	Gas-Electric	250	90	11 3	103,880	J. G. Brill Co.
.....	2	Motor	Gas-Electric	275	32	22 6	104,260	Electro-Motive—St. Louis
.....	2	Motor	Gas-Electric	275	0	46 9 1/2	101,670	Electro-Motive—St. Louis
Oahu Railway & Land Co.....	2	Motor	Gasoline	208	62	.....	52,000	Company Shops
Oregon-Washington & Nav.....	1	Motor	Gas-Electric	275	20	26 0	97,000	Electro-Motive—St. Louis
Richmond, Fredericks & Potomac	1	Motor	Gas-Electric	550	41	26 3 1/2	135,000	J. G. Brill Co.
.....	1	Trailer	.....	100	.....	.....	65,000	J. G. Brill Co.
Seaboard Air Line.....	7	Motor	Gas-Electric	275	.....	60 0	106,500	Am. Car & Foundry—Brill
.....	2	Motor	Gas-Electric	275	.....	60 0	109,000	Am. Car & Foundry—Brill
.....	9	Trailer	.....	.....	96	.....	78,000	Am. Car & Foundry—Brill
.....	1	Trailer	.....	.....	.....	60 0	62,000	Am. Car & Foundry—Brill
.....	2	Motor	Gas-Electric	275	.....	62 0	106,000	Electro-Motive—St. Louis
.....	2	Trailer	.....	.....	96	.....	78,000	St. Louis Car Co.
Wash., Baltimore & Annapolis..	10	Motor	Gas-Electric	.....	94	.....	116,000	J. G. Brill Co.

Export

Purchaser	No.	Motor or trailer	Type of power plant	Horse-power	Seating capacity	Length of bagg. compt. Ft. In.	Weight	Builder
Consolidated Railroads of Cuba...	4	Motor	Gas	90	38	7 0	30,000	Am. Car & Foundry—Brill
United Rys. of Havana.....	8	Motor	Gas-Electric	275	46	11 1	90,000	Am. Car & Foundry—Brill

Canada

Purchaser	No.	Motor or trailer	Type of power plant	Horse-power	Seating capacity	Length of bagg. compt. Ft. In.	Weight	Builder
Canadian National.....	2	Motor	Oil-Electric	300	37	27 3	141,400	Can. C. & F. Co. Shops.
.....	1	Motor	Oil-Electric	300	57	15 11	141,400	Can. C. & F. Co. Shops.
.....	2	Motor	Oil-Electric	300	72	7 5	141,400	Can. C. & F. Co. Shops.
.....	1	Motor	Gas-Electric	250	60	14 11	92,380	J. G. Brill Co.
.....	1	Motor	Gas-Electric	250	40	30 5	98,840	J. G. Brill Co.
.....	1	Trailer	.....	.....	.....	34 4	57,880	J. G. Brill Co.
Toronto, Hamilton & Buffalo....	1	Motor	Gas-Electric	275	47	16 7	85,000	Electro-Motive—Can. C. & F. Co.

Reduction in Southern Coal Rates Disapproved

Rates proposed by carriers found not justified because relatively unreasonable

WASHINGTON, D. C.

THE Interstate Commerce Commission on February 25 made public its fifth decision in a series of "lake cargo" coal rate cases dating back to 1912, finding not justified a reduction of 20 cents per ton in the rates on bituminous coal from mines in southern West Virginia, eastern Kentucky, eastern Tennessee and southwestern Virginia, to Toledo and Sandusky, Ohio, for transshipment by vessel across the lakes. The reduction had been proposed by the Chesapeake & Ohio, Louisville & Nashville, Norfolk & Western and Virginian, to meet a similar reduction ordered by the commission in the rates from Pennsylvania and Ohio mines to the lakes, which became effective last August 10. The tariffs proposing the reduction, which had been under suspension, were ordered cancelled.

Specifically disclaiming the inclination, the wisdom, or the power "to make or regulate rates for the purpose of determining whether goods shall be bought or sold, produced, manufactured or consumed in one section or locality, or by one set of persons or by another," the commission based its decision mainly on its ideas as to the proper relation between rates on competitive traffic to a common market, with reference to distance and other transportation conditions. It also, however, cites its duty under section 15a to try to give the railroads a fair return and the principles of the Hoch-Smith resolution, apparently on the theory that a reduction in rates on coal would make it more difficult for the commission to reduce rates on agricultural products.

The decision was rendered in the face of persistent agitation in the Senate on the part of senators from the southern coal states, and on the day following the conclusion of hearings before the Senate committee on interstate commerce on the question of the confirmation of Commissioner Esch for reappointment, at which both Mr. Esch and other commissioners were almost placed on trial because of their decision last year in the lake cargo case.

Of the commissioners six voted for the decision while three dissented, and the report states that "Commissioner Esch was necessarily absent, but had he been present he would have concurred in the result." Commissioners Meyer, Woodlock and Brainerd dissented, and Commissioner Porter, who has recently become a member of the commission, did not participate in the disposition of the case. In the 1927 decision the vote was 7 to 3, Commissioners Hall, Meyer and Woodlock dissenting, while Commissioner Brainerd did not participate. The alignment of the commissioners therefore is the same as before except that Commissioner Brainerd took the place of Commissioner Hall. Commissioners Eastman and Taylor wrote concurring opinions expressing their own reasons for finding the reduction in rates not justified.

It is apparent, the report says, that the proposed rates are "admittedly less than maximum reasonable rates for the hauls to which they would apply," and it says that "the necessary result would be further impairment of the aggregate annual net railway operating income in

the group," and that "to accord to a carrier the right to transport a substantial portion of its tonnage at rates upon the obviously low level here proposed, while giving no relief to the agricultural industry, including livestock, which Congress has declared to be in a depressed condition and entitled to the lowest possible lawful rates consistent with the maintenance of an adequate transportation system, is counter to that mandate."

"The Hoch-Smith resolution is not directed to the carriers," the report says, "it is directed to us. Carriers who seek our approval of rate proposals will be expected to show that a finding of justification can be made consistently with the policies outlined for us in the resolution. That has not been done in this proceeding." In view of the conclusion that the rates are not justified upon other grounds, a discussion of the contention of the northern operators that the proposed rates would be unduly prejudicial and preferential is declared to be unnecessary.

Much of the language in the reports gives the impression of an effort to reply to criticisms of the commission's 1927 decision as expressed in the Senate and as implied in the resolution adopted by the Senate calling on the commission to state its authority for believing it has power to "equalize prosperity" between communities.

Extracts from the report by the commission, including its statement of the issues and most of the text of its conclusions are as follows:

Extracts From the Report

The burden of justifying the proposed rates was borne by the Chesapeake & Ohio, Norfolk & Western, Louisville & Nashville, Hocking Valley, and to some extent by the Virginian, hereinafter for convenience called the southern respondents. These respondents were supported by various associations of coal producers in the districts from which the reduced rates are proposed, a number of commercial organizations in or adjacent to those districts, agricultural, commercial, and civic organizations, coal dealers, and numerous manufacturers and industries consuming in the aggregate large quantities of lake-cargo coal in the West and Northwest, the attorneys general of Tennessee, and Michigan, the Governor of Minnesota, and the regulatory commissions of that state and of West Virginia, Virginia, Kentucky, Wisconsin, and South Dakota. They were opposed by respondents Baltimore & Ohio, New York Central, and Pennsylvania, which participate as delivering carriers in the proposed rates, the Wheeling & Lake Erie which serves mines in the No. 8 and certain other districts in Ohio, associations of coal producers in the Pittsburgh, Connellsville, Ohio No. 8, Cambridge, Hocking, Crooksville, and Shawnee districts, the Pittsburgh Chamber of Commerce, the regulatory commissions of Pennsylvania and Ohio, and the Illinois Coal Traffic Bureau.

Throughout the hearing, upon brief, and in oral argument these respondents and interveners in their behalf reiterated the contention that the proposed rates were in the public interest because they represent reductions in the present rates on this traffic. The southern operators contend that the reduced rates are necessary to insure to them what they consider to be their fair share of the lake-cargo market. Practically all of the testimony of these operators, as well as of the supporting consumers, deals with commercial and economic conditions affecting their respective industries.

Clearly it is not within our power to adjust rates for the primary purpose of enabling competing shippers to market their products. The rates which we find in proceedings before us

to be lawful may have that effect, but fundamentally they must be based upon conditions surrounding the transportation, including the cost and value of the service. In the original cases which concerned these lake-cargo rates evidence with respect to the movement of coal under the rates in issue was admissible for the purpose of showing that the complaining parties had been injured by prejudice alleged by them in the rate adjustment, and to enable us to appraise at true weight the rate comparisons before us. This evidence having been introduced it was competent for the carriers and the intervening southern operators to introduce testimony tending to show that factors other than freight rates had affected the movement. Except in its relation to these particular points we have no concern with this evidence, and for any other purpose we shall give it no consideration.

The Shift in Lake Cargo Tonnage

The evidence bearing upon the movement of lake-cargo coal shows that the relative movement from the southern fields has been substantially greater in recent than in former years. The percentage of the total lake-cargo tonnage shipped from the southern West Virginia and Kentucky districts has increased from 24 per cent in 1913, 40 per cent in 1921, and 57 per cent in 1924, to 71 per cent in 1926 and 74 per cent in the first 9 months of 1927. During the last three years these southern districts practically dominated the lake market, and a witness for these operators admitted that during those years they had almost a monopoly on that market. During that period there were in effect differentials the same as here proposed. The shift in tonnage to the southern districts appears to have been due, in large measure, to lockouts, miners' strikes, and to higher costs of producing coal in the northern than in the southern districts, and these conditions, although in constantly lessening degree, still prevail in those districts.

Many of the large industrial consumers in Michigan and in the states west of Lake Michigan and Lake Superior, and to some extent in Canada, use lake-cargo coal which originates in the southern districts, and certain of them purchase that coal under contracts whereby they would obtain the benefit of the reduction proposed on coal shipped thereunder. Certain others have their own mines, known as captive mines, in some of those districts from which they receive all or a part of their supply of coal. Those consumers naturally favor the proposed rates. They, together with a number of commercial organizations and other consumers in those states which were represented at the hearing, the Governor of Minnesota, and the state commissions representing the general public in those states, support the proposed rates on that and the further ground that in narrowing the present differentials in the rates from those districts, on the one hand, and the northern districts, on the other, they would tend to promote active competition between those districts in the sale of lake-cargo coal and afford a wider area from which to draw coal.

Most of the consumers supporting the proposed rates stress the fact that the carriers proposing these rates are among the most prosperous in the country, and for that reason also urge that these rates should be approved. The respondent carriers which these interveners describe as very prosperous, with the exception of the Hocking Valley, carry this coal only part of the total distance to the lake. These respondents have not offered to shrink their divisions to the extent of the reductions here proposed, but apparently expect their unwilling connections to share in the proposed reductions. Respondents Pennsylvania, Baltimore & Ohio, and New York Central show that the decreased divisions which they would receive under the proposed rates would result in substantial diminution of their revenues, which they urge that they are unable to bear.

The reduced rates are not proposed because the present rates are regarded by respondents as in excess of maximum reasonable rates, and as such amenable to attack under section 1 of the act, but solely for commercial and economic reasons. These commercial and economic conditions are alleged to create a public interest in these proposed rates which in itself is said to be sufficient for their justification. The interests of the public are ever before us, and, wherever prominently concerned, always deserve serious consideration. Obviously, however, the public interest can not prevail if the proposed rates would violate any of the provisions of the interstate commerce act which we administer.

The position of the southern respondents is that the proposed rates, although admittedly low and hence not reasonable maximum rates, are not unreasonably low *per se*, or less than reasonable minimum rates, and would not cast a burden on other traffic. In support of that position respondents Chesapeake & Ohio, Hocking Valley, and Norfolk & Western rely upon comparisons of the earnings under the proposed rates with either the average revenues or expenses on all coal or on all freight traffic on their respective lines and upon operating and cost statistics, and, as does also respondent Louisville & Nashville,

upon comparisons with divisions of certain rates on coal, with rates and earnings on coal from some of the same and other coal-producing districts to various destinations, and with the rates and earnings on other commodities.

The proposed rate from the Kanawha, Big Sandy, and Kentucky districts is \$1.71 and from the New River district \$1.86. The straight average distances over the lines of respondents Chesapeake & Ohio and Hocking Valley to Toledo are 342.6 miles from the Kanawha, Big Sandy, and Kentucky districts and 391.7 miles from the New River district, and for those distances the proposed rates would yield 4.99 and 4.74 mills per ton-mile, respectively. The average earnings of the Chesapeake & Ohio on all coal for 1926 were 5 mills per ton-mile for an average haul of 308.74 miles, and of the Hocking Valley for the same year 5.45 mills for an average haul of 119.7 miles. In that year bituminous coal constituted 82 per cent of the total freight tonnage of the Chesapeake & Ohio and 80 per cent of the total freight tonnage of the Hocking Valley. The total freight operating expenses per revenue ton-mile for that year were 3.9 mills on the divisions of the Chesapeake & Ohio over which lake-cargo coal is moved and 4.4 mills on the Toledo division of the Hocking Valley over which this traffic is handled by the latter. The Chesapeake & Ohio owns a majority of the capital stock of and in fact controls the Hocking Valley. Approximately 65 per cent of the lake-cargo coal from the Chesapeake & Ohio districts moved over the foregoing route in 1926 and the remaining 35 per cent over the Chesapeake & Ohio in connection with either the Baltimore & Ohio, Pennsylvania, or New York Central to the lake. The proposed rates from those districts would also apply over the latter routes but the Chesapeake & Ohio offers no justification for the proposed rates over those routes. As stated, the other carriers forming those routes are here as protestants. Approximately 29 per cent of the lake-cargo coal from the Chesapeake & Ohio districts in 1926 moved over the Pennsylvania beyond Columbus.

[The report then takes up the consideration of detail evidence relating to cost of transportation and rate comparisons.]

The rates on coal with which the proposed rates have heretofore been compared are not parts of the lake-cargo coal-rate structure, but of other and different rate structures and hence in the nature of collateral comparisons. The rates on lake-cargo coal from the southern and other districts in the Appalachian region to Lake Erie ports constitute a definitely interrelated rate structure in which the rates on this traffic are, and for many years have been, made independently of those in other coal-rate structures generally. As demonstrating that interrelationship it may be noted that counsel for the Norfolk & Western and Virginian stated at the hearing that the reduced rates here proposed by those respondents would be withdrawn if the former higher rates in effect prior to August 10, 1927, from the northern districts to Lake Erie ports were restored. It remains to be determined whether the proposed rates are just and reasonable measured by other rates on like traffic in the same rate structure.

The mines of protestant coal producers are in the Pittsburgh and Connellsville districts of Pennsylvania and the Ohio No. 8, Cambridge, Hocking, Crooksville, and Shawnee districts of Ohio. The following table shows the rates on lake-cargo coal, the straight average distances, and the ton-mile earnings to all the lake ports to which the rates apply from those districts, from the Fairmont district in northern West Virginia, and from the Pomeroy and Jackson County districts in southern Ohio, together with the present and proposed rates, the straight average distances, and the ton-mile earnings to Toledo and Sandusky from the southern districts. The distances shown from the Crooksville, Hocking, Shawnee, Pomeroy, and Jackson County districts were compiled from the appendix to our original report in *Lake Cargo Coal Rates, 1925*, a copy of which was made a part of the record in this proceeding. From the other districts the distances were compiled from various exhibits.

District	Straight average distance Miles	Rate	Ton-mile earnings Mills
Ohio No. 8.....	166.6	\$1.43	8.58
Cambridge	172.2	1.43	8.30
Pittsburgh	178.0	1.46	8.20
Crooksville	184.5	1.43	7.75
Hocking	192.0	1.43	7.44
Shawnee	195.0	1.43	7.33
Pomeroy	241.8	1.43	5.91
Jackson County	253.2	1.43	5.65
Connellsville	228.2	1.56	6.83
Fairmont	261.1	1.71	6.54
Kenova	313.6	Present 1.91 Proposed 1.71	6.09 5.45
Kanawha	335.1	Present 1.91 Proposed 1.71	5.69 5.10
Kentucky and Big Sandy.....	338.1	Present 1.91 Proposed 1.71	5.65 5.06
Thacker	349.6	Present 1.91 Proposed 1.71	5.46 4.89

District	Straight average distance Miles		Rate	Ton- mile earnings Mills
Hazara	419.2	Present	1.91	4.56
		Proposed	1.71	4.08
Harlan	446.9	Present	1.91	4.27
		Proposed	1.71	3.83
McRoberts	469.5	Present	1.91	4.07
		Proposed	1.71	3.64
New River	385.2	Present	2.06	5.34
		Proposed	1.86	4.83
Tug River	296.6	Present	2.06	5.21
		Proposed	1.86	4.70
Pocahontas	424.6	Present	2.06	4.85
		Proposed	1.86	4.38
Clinch Valley	453.6	Present	2.06	4.54
		Proposed	1.86	4.10
Virginian (mines)	484.6	Present	2.06	4.25
		Proposed	1.86	3.83
Kanawha, Kentucky, Big Sandy, Kenova, Thacker, Hazard, Har- lan, and McRoberts.....	383.5	Present	1.91	4.98
		Proposed	1.71	4.46

Little or no effort was made by the southern respondents to prove that the proposed rates are just and reasonable measured by the rates on like traffic from the Ohio No. 8, Cambridge, and Pittsburgh districts. Their position, in substance, is that in the absence of undue prejudice and preference the only limitation on the measure of the proposed rates is that they shall not be less than minimum reasonable rates *per se* or be so low as to cast a burden on other traffic. That construction of the law, as we view it, is too narrow. Section 1 declares that rates shall be just and reasonable, and prohibits every unjust and unreasonable rate. In other words, it requires that rates shall not only be reasonable *per se*, but just and reasonable in their relation to other rates on like traffic in the same territory that afford a proper standard of comparison, and applies to instances in which rates are below that standard, distance and transportation conditions considered, no less than to those in which the rates exceed that standard. Prior to the enactment of the transportation act, 1920, violations of section 1 could be corrected only by the prescription of maximum reasonable rates. Under the interstate commerce act, as amended by the transportation act, 1920, we are empowered, whenever, after full hearing, we find that any rate is or will be unjust or unreasonable, or otherwise in violation of any of the provisions of that act, to determine and prescribe what will be the just and reasonable rate to be thereafter observed, or the maximum or minimum, to be charged. The provisions of section 1 are as broad in scope as the power conferred for its administration.

The rates on lake-cargo coal from these districts are, as previously explained, parts of a definitely interrelated rate structure on like traffic. The rates from the Ohio No. 8, Cambridge, and Pittsburgh districts were prescribed by us as maximum reasonable rates. There is no contention that those rates exceed that limit. They afford, therefore, appropriate and fair standards for determining whether the proposed rates are just and reasonable, distance and transportation conditions considered.

No substantial evidence was offered by the southern respondents that transportation conditions under the proposed rates are materially, if any, superior to those under the rates on like traffic from the Ohio No. 8, Cambridge, and Pittsburgh districts, although they enumerated in great detail the favorable conditions generally under which that traffic is handled by them. The Chesapeake & Ohio undertook to prove that operating conditions are more favorable and that the out-of-pocket train service cost is relatively lower, distance considered, from its assembly yard in the Kanawha district to Toledo than from the assembly yard of the Baltimore & Ohio in the Fairmont district to Lorain, but it is not contended that the showing thus made is representative in this respect of the situation from the Ohio No. 8, Cambridge, and Pittsburgh districts.

Differentials in Relation to Distance

It is apparent, of course, that the proposed rates, on the one hand, and the rates from the Ohio No. 8, Cambridge, and Pittsburgh districts, on the other, represent different rate levels, the former being admittedly less than maximum reasonable rates for the hauls to which they would apply and the latter have been prescribed by us as maximum reasonable rates for the hauls from those districts. But the straight average distances to the ports from the districts taking the proposed \$1.71 rate range from 135.6 to 291.5 miles and, from the districts taking the proposed \$1.86 rate, from 207.2 to 306.6 miles in excess of the straight average distance from the Pittsburgh district. The differentials by which those rates would exceed the present rates from the Pittsburgh district are only 25 to 40 cents, respectively. There are a number of single-line routes from the Ohio No. 8, Cambridge, and Pittsburgh districts to Lake Erie ports. The hauls from the southern districts to the lake are over two or more separate or independent lines, with the exception of the haul over the Chesapeake & Ohio-Hocking Valley route.

Based on the distance scale of rates on sand and gravel which we prescribed for application between certain portions of southern territory, and which is the lowest of any distance scale shown of record, using the single-line rates therein for the distance from the Pittsburgh district and the joint-line rates for the distances from the southern districts, the rates from the southern districts would exceed those from the Pittsburgh district by amounts ranging from 40 to 75 cents. If the rates from these districts were based on the distance scale of rates on bituminous coal from the head of the lakes to destinations in Minnesota, North Dakota, and South Dakota prescribed in *Holmes & Hallowell Co. v. G. N. Ry. Co.*, 69 I.C.C. 11, the rates from the southern districts would exceed the rate from the Pittsburgh districts by amounts varying from 94 cents to \$1.79. These comparisons, of course, take no account of the fact that the rates on lake-cargo coal are group rates and that in the adjustment of such rates there is usually more or less disregard of distance. But the differentials of 25 cents and 40 cents by which the proposed rates would exceed the rate from the Pittsburgh district are lower, or relatively lower, than numerous differentials either prescribed by us or voluntarily established in rates on coal from competing mines or mining groups in the same and other sections of the country to various destinations, of which those shown in Appendix No. 2 are representative. The only differentials shown of record which they approximate in part are those prescribed in *Alabama Mining Institute v. I. C. R. R. Co.*, *supra*, for differences in the straight average distances between a few of the southern districts nearest Lake Erie and the Pittsburgh district.

Based on the average differences hereinbefore shown, the rate differences over the Pittsburgh district under the basis prescribed in that case would range from 25 to 60 cents from the \$1.71 districts and from 40 to 60 cents from the \$1.86 districts. In *Ohio-Michigan Coal Cases*, 80 I.C.C. 663, we required rates from southern Ohio mines to Toledo, southern Michigan, and related territory to be 50 and 75 cents lower than corresponding rates from mines in the Inner Crescent and Outer Crescent, respectively, in the Appalachian fields. Hauls from the Inner Crescent and Outer Crescent mines average 135 and 209 miles, respectively, longer than from the Ohio mines.

The southern respondents stress the fact that the proposed rates would restore the differentials and the relation in cents per ton which we prescribed in *Lake Cargo Coal Rates*, 46 I.C.C. 159, but at that time (1917) the rates on this traffic were only 90 cents from Ohio No. 8 and Cambridge districts and 93 cents from the Pittsburgh district, and the rate difference between the Pittsburgh district and the districts which it is now proposed shall take the \$1.71 rate was only 19 cents. On basis of the evidence then before us this differential was widened to 25 cents. Moreover, at that time the rates of 90 and 93 cents were respectively, 124 and 120 per cent of the rate of \$1.12 then in effect from the southern districts now taking a rate of \$1.91. We found that relation to be too narrow and widened it to 131 and 127 per cent, respectively. The relationships between the present rates of \$1.43 from the Ohio No. 8 and Cambridge districts and \$1.46 from the Pittsburgh district, on the one hand, and of \$1.91 from the southern districts, on the other, are, respectively, 134 and 131 per cent, whereas the proposed rates would reduce those percentages to 119 and 117 per cent, or less than they were when we found them too narrow in 1917.

We have frequently said that distance alone is only one of the elements which must be considered in determining upon a lawful rate adjustment; and in competitive adjustments the carriers may disregard distance even in substantial degree, so long as the competitor whose geographical location is largely disregarded is not injured thereby, but where it is made to appear in an interrelated adjustment such as that with which we are here dealing that such a competitor is injured and is complaining, we believe that a proper interpretation of the law which we administer demands a remedy. This does not mean that even then distance may not be to some extent disregarded, particularly in coal-rate adjustments, but it does mean that differences in distance such as those before us, which are 115.5 per cent and 88.4 per cent, respectively, of the straight average distance from the Pittsburgh district and from the Hocking, Jackson County, and Pomeroy districts to the lake, require greater recognition than the proposed differences in rates, which are only 17.1 per cent and 19.6 per cent, respectively, of the rates from the same districts, would accord to them.

Managerial Discretion

It is settled practice that the burden of justifying the suspended rates is upon the respondent carriers who have proposed them. This burden the southern respondents have assumed in this proceeding. In essence their justification is that the reductions proposed are within a zone within which the carriers may, in the exercise of their sound managerial discretion, fix rates

as they deem necessary for the purpose of holding traffic to their own lines as originating carriers lest it be originated upon the lines of other carriers, and thereby preserve their net revenues lessened, it is true, in substantial amount, but not as greatly as if the tonnage were carried over other lines. The claim is made that as long as the reductions are not so great as to cast a burden upon other traffic which they carry and section 3 is not violated, the proposed rates do not contravene any section of the act and we are therefore powerless to interfere with such exercise of managerial discretion. We have already indicated our disagreement with this contention in so far as our powers under section 1 are concerned.

The managerial discretion here exercised, immunity for which from our action is claimed, is in fact that of the southern carriers upon whose lines the traffic covered by the reduced rates originates. It is exercised in opposition to the managerial discretion of the northern lines with which they connect, except the Hocking Valley which is controlled by the Chesapeake & Ohio, and it is proposed to use the services of those northern lines in bringing the coal to the lakes. The latter carriers are here as protestants.

We recognize that there is a proper sphere for managerial discretion and enterprise; and as long as corporate action stays within that sphere we have nothing to do with the carriers and those who voice their policies and translate them into action. We are not a general manager of the railroads, or of any of them. We have neither the inclination, the wisdom, nor the power to make or regulate rates for the purpose of determining whether goods shall be bought or sold, produced, manufactured, or consumed in one section or locality, or by one set of persons or another. Such has been the settled policy of the Commission from its creation in 1887 to the present day. We have other well-recognized standards by which the lawfulness of rates have been and are tested, and these standards concern themselves with transportation characteristics. When the standards are applied, the necessary and immediate effect may be to interject into an existing commercial situation new factors, important to those who produce or distribute, buy or sell, and to their competitors; but such result is neither the cause nor end which has motivated our action. These standards are of such universal acceptance, and our practice is so well understood by students of transportation, that but for misconceptions apparent on this record it would be unnecessary to advert to them.

To be immune from review as previously stated, managerial discretion must in no wise step over any limitation of law. There are rights of others which it is our function under the law to protect. No carrier may shield itself by such a claim if any contrary provision of law is thereby infringed. Of course the southern carriers are not the only ones who may assert a right to an immune managerial discretion. Their rights in this regard can not be superior to the rights of other carriers. If conceded to them, and our inquiry must stop with a finding that the rates proposed, however low, are justified when it appears that they yield substantially more than out-of-pocket costs, regardless of their effect upon other carriers or the ultimate effect upon other commodities, then in like circumstances we must concede the same right to each and every set of carriers which may claim it. We would be obliged to concede it not alone on bituminous coal, but on any commodity or description of traffic which management might single out for the beneficent application of rates which are admittedly too low to be taken as a fair criterion for the just and reasonable rates on this traffic contemplated by section 1 of the act. To make such concession would nullify effective administration of vital portions of the act. This is too narrow a view of the duty of the carriers and of the commission, and does not best serve the public interest.

It is not enough that rates clear confiscation and yield something toward a fair return, and that they be equally applied to all to whom the carrier owes an immediate duty under sections 2 and 3 of the act, and that the provisions of section 4 are observed. These statutory duties directly concern those who are immediately affected, but who form only a portion of the great public whose interest in the maintenance of an adequate transportation system has been recognized by Congress in the act we are charged to enforce and administer. Other sections of the law impose upon us duties which we must observe and effectuate in the determination whether the suspended rates, initiated as a matter of carrier managerial policy, have in law been justified.

We are not dealing with rates for different sections of the country. As before explained, this rate structure is an interdependent entity. The producing districts are all parts of the Appalachian coal area. The points of destination in this rate structure are upon a common lake, and the movement is to a considerable extent through identical territory. Except the Louisville & Nashville, the carriers have long been within the same traffic group of their own creation, and in 1920, under the provisions of law above quoted, they were grouped by us in the

same rate group or territory. The traffic originated by the Louisville & Nashville passes through this group, and is delivered to the lake docks by carriers within the group.

All of the rates under consideration, and the rates from the Pittsburgh and Ohio fields as well, were initiated, modified, established, or adjusted by us, in the exercise of our duty under the paragraph of section 15a above quoted, in an endeavor to provide as nearly as may be such a system of rates as would enable the carriers in the group in which they were placed to earn the aggregate annual net railway operating income based upon property values, which the law requires us to endeavor to secure. Rates were similarly adjusted in the group of which the Louisville & Nashville is a part. In so adjusting these rates, as the law requires, we gave due consideration, among other things, to the transportation needs of the country and the necessity of providing the people of the United States with adequate transportation. The proceeding in 1920 was upon notice, and our action therein was taken after the respondents and other carriers had shown their revenue needs and all, including the public, had been heard upon an elaborate and far-reaching record. *Increased Rates, 1920*, 58 I.C.C. 220. Subsequently, in the performance of our continuing duty under that section, a general reduction was made. *Reduced Rates, 1922*, 68 I.C.C. 676.

It has been the constantly reiterated complaint of interested carriers that our action has failed and is now failing to yield the aggregate revenue which we were directed to accomplish, and which we endeavored as nearly as may be to secure. The reductions we required from the Pittsburgh and Ohio fields were made in the exercise of our power to modify particular rates found to be unjust and unreasonable. To the extent that they reduced the net railway operating income in the group, the consequence was one which was contemplated by the law itself.

The proposed reductions before us would create no new traffic. If the prophecies of the respondents are correct, the only effect would be a diversion of a portion of the tonnage from one set of carriers to another, within the same rate group. The necessary result would be further impairment of the aggregate annual net railway operating income in the group. The diminution in aggregate income involved is several million dollars a year and, if permitted to become effective, would be a considerable factor in our re-examination of the rate structure of the country which we are now making at the express direction of Congress. If the aggregate return should prove not to be sufficient to comply with the statute, the law would then require us to provide that other traffic, even that carried by carriers not affected by this controversy, must eventually make up the deficiency. The alternative would be to find in such investigation that these competitive reductions were not the result of honest and efficient management. What has just been said would be inapt were the reductions proposed or required in order to avoid the inhibition of section 1 against rates higher than reasonable maxima, but we are here dealing with proposed rates which are admittedly below reasonable maxima.

It is obvious that with the exceptions as to reasonable latitude in the fixation of particular rates found in paragraph (2), Congress has intended the establishment and maintenance of uniform rates upon competitive traffic, which will adequately sustain all the carriers engaged therein, according to the standards laid down in the section. If certain carriers are extremely prosperous, as is said of the southern respondents here, that contingency has been anticipated by the Congress, which has impressed upon the excess of their earnings a trust. The duty of maintenance of a generally adequate and uniform basis of rates is imposed upon the prosperous carrier, so far as it participates in the transportation, by the Congress. To the extent that managerial discretion on the part of a prosperous carrier may have the effect of lowering rates below the general level, it runs counter to the expressed policy of Congress as to uniformity, and nullifies the intent to impress a trust upon any excessive returns for important national purposes. Proposals which necessarily have this effect are not justified.

Nor is the management of a prosperous carrier wholly free to pick out at will one commodity, such as bituminous coal, and in its discretion accord it a basis of rates so low as not to afford a fair measure for the reasonableness of rates on even that traffic. The policy of Congress as to where the lowest possible rates shall be applied has been expressed by it in the Hoch-Smith resolution, to which we have given such effect as we can in respect of important commodities. *Georgia Peach Growers Exch. v. A. G. S. R. R. Co.*, 139 I.C.C.; *Calif. Growers' & Shippers' Protective League v. S. P. Co.*, 129 I.C.C. 25, 132 I.C.C. 582. Other important investigations, under the same resolution, with respect to agricultural products, including livestock, embracing practically the entire country, including the territory here particularly concerned, we now have in progress.

Battery-Oil-Electric Locomotive

Novel type of motive power is being tried by New York Central for service on west side lines in New York City

A NEW battery-oil-electric locomotive has just been completed for the New York Central for switching service. The flexibility of its equipment makes it particularly adaptable to the different characters of service encountered in and around the New York terminals.

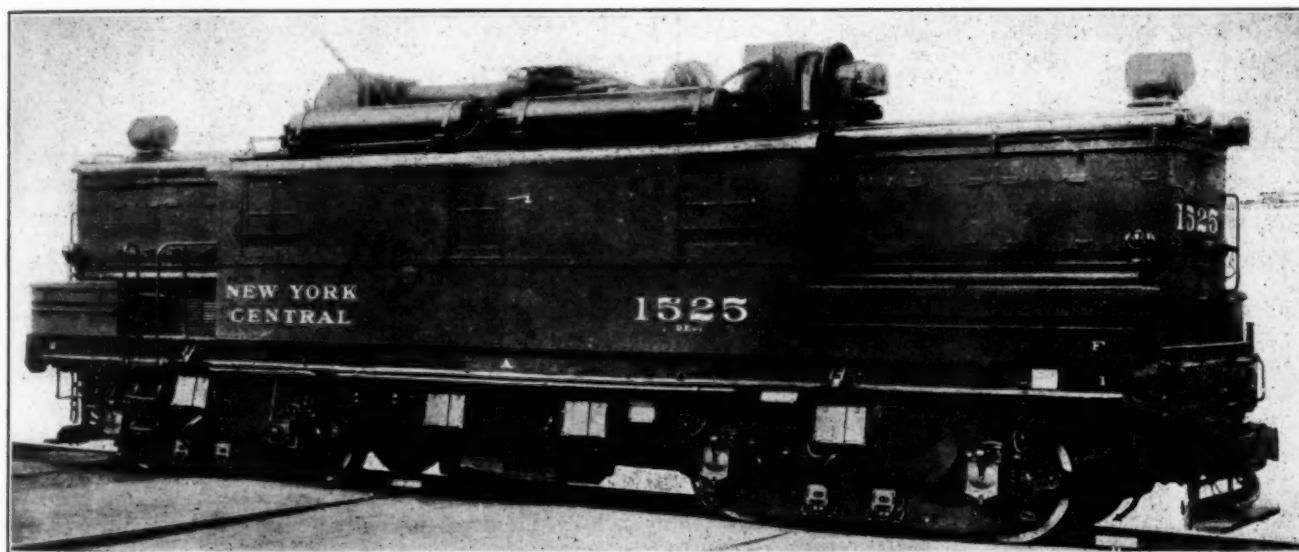
The locomotive is primarily intended for operation in the freight yards on the west side, New York City, which are not electrified and where part of the time the locomotives are required to operate through city streets. Switching service requires that a locomotive respond quickly to applications of power, which in turn means that a relatively large amount of power must be available for short periods of time, even though the average energy requirement over an eight-hour shift is small. To secure this "snappy" action the locomotive is equipped with a storage battery of relatively large capacity which

such times the locomotive can be operated from the battery alone.

It should be noted that the engine is run at constant speed under the control of a governor, and this permits the maximum fuel economy to be obtained.

The storage battery is unusual in that it consists of 218 cells, the maximum number so far used for locomotive service, which is made possible by grounding the mid-point.

As the locomotive will be called on at times to operate over tracks which are electrified, third-rail shoes are provided and also an overhead collector. This permits the engine and battery to be disconnected from the traction motors when operating in electrified districts. As the West Side electrification is extended this feature will become more and more important. The third-rail shoes are of the folding type to permit operation in city streets.



New York Central, Battery-Oil-Electric Locomotive

can easily supply the high momentary currents required for switching service.

Since it is expected that the locomotive will be used mainly in yards that are not electrified, a 300-horse power oil engine direct connected to a 200-kilowatt generator is provided for charging the battery. This engine is capable of supplying ample power to keep the battery fully charged under all conditions of switching service. The generator is so designed that if it is run at the same time that power is being supplied to the traction motors, it will divide the load with the storage battery under periods of heavy output without overloading the engine and will return automatically to charging the battery as soon as the load has decreased. The voltage when the load is light is so proportioned that there is no danger of overcharging the battery.

As the generator capacity is more than enough to supply the average energy requirement of the locomotive over an eight-hour shift, it will not have to be run all the time; this is especially advantageous in connection with work in the lower West Side, where, at times, switching locomotives have to go inside of buildings. At

The new locomotive is a product of designs by the New York Central's electrical engineering department under the direction of E. B. Katte, chief engineer, electric traction, and H. A. Currie, assistant electrical engineer, working in combination with the General Electric Company, Schenectady, N. Y., Electric Storage Battery Company, Philadelphia, Pa., and the Ingersoll-Rand Company, New York, N. Y. The mechanical portion was built and the locomotive equipped by the American Locomotive Company at its Schenectady plant.

Mechanical Design

The locomotive is, in general, of the swivel truck type with a cab having three sections, the batteries being carried in the end sections and the oil engine in the central section.

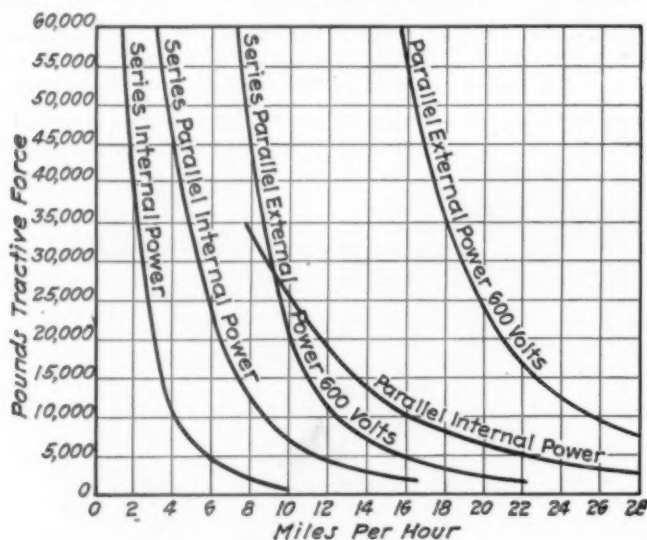
The running gear consists of two four-wheel swivel equalized trucks. The truck frames are of the Commonwealth cast steel type with transoms and pedestals cast integral. These are carried on semi-elliptic springs to the equalizers which in turn are carried on the journal boxes, through quiver springs. The transom is a hollow

box casting which serves as a duct for the air used for motor ventilation. Truck center plates are carried on the transom and the air for ventilation is conducted through the center of these plates into the transom and from there distributed to the two motors carried on the truck.

Wheels are solid rolled steel, 44 in. in diameter, axles are 8 in. in motor bearings, and 9 in. in gear fit, with 8 in. by 14 in. collarless journals.

The cab platform is a Commonwealth steel casting. The cab itself is of structural material riveted to the platform. The storage batteries are arranged in three tiers convenient of access from the outside. The central section of the cab in addition to the power plant and the control apparatus, has two small operating compartments for the enginemen. Good vision along the track is obtained from the engineer's seat as the battery section does not project sufficiently to interfere.

Doors are so located as to give access to each operating compartment from the outside and to the power



Locomotive Operating Characteristics

plant compartments from the operating compartments. A hatch is provided in the roof of the central compartment directly above the oil engine to permit its removal.

Traction Motors

The locomotive is equipped with four GE-286, 600-volt single geared commutating pole traction motors. Each motor is geared to the driving axle through 72-tooth gear and 17-tooth pinion. These motors and the gear ratio are the same as used on the New York Central Class Q electric switching locomotives. The continuous rating of the motor is 330 horsepower at 600 volts and the one-hour rating 415 horsepower at 600 volts. At this rating of the motors the locomotive will develop a tractive effort of 34,000 lb. It will develop a tractive effort of 60,000 lb. with 900 amp. per motor.

Two motor blower sets furnish air for ventilation of the traction motors.

Air for the air brakes is furnished by one CP-26-C4 compressor having a displacement of 120 cu. ft. of air per minute when running at 600 volts.

Control

The control is Type PCL, non-automatic with individual electro-pneumatically operated contractors. It is arranged for operation from either end of the locomotive. It is also arranged to permit the following methods of operation:

- (a) Internal power.
 1. From storage battery alone,
 2. From storage battery and engine-generator together.
- (b) External power.
 1. From third-rail.
 2. From overhead.

The control is arranged to connect the traction motors automatically to internal power should the external power fail at any time (which may be due to running off the end of the third-rail) and to restore the connection automatically to external power the first time that the controller is shut off after external power is again available. Indicating lights show whether operation is from internal or external power.

Resistance steps are used for accelerating the locomotive both with internal and external power operation. The controller steps and motor groupings are as follows:

- 10 Resistance steps, motors connected four in series.
 - 1 Running position, motors connected four in series.
- 6 Resistance steps, motors connected two in parallel.
 - Two such groups in series.
- 1 Running position, motors connected two in parallel.
 - Two such groups in series.
- 7 Resistance steps, motors connected four in parallel.
 - 1 Running position, motors connected four in parallel.

The locomotive is protected against short circuits by a type JR high speed circuit breaker. The individual motors are protected against overloads by overload relays which trip out the high speed circuit breaker.

The entire electrical equipment was furnished by the General Electric Company.

Battery

The storage battery consists of 218 cells of MVA-41 Exide-Ironclad battery. The ampere-hour capacity of the battery is 680 and the kilowatt hour capacity is 294 at the six-hour rate of discharge. All cells are connected in series for connection to the generator and traction motors but the mid-point is grounded to reduce the maximum potential to ground.

The control and lights, etc., are connected between each terminal of the battery and ground and arranged to equalize so far as possible any unbalanced loads on the two halves of the battery.

The control is always connected to the battery even when running on third-rail.

The battery was furnished by the Electric Storage Battery company.

Meters

The locomotive is equipped with a very complete metering equipment in order to assist in studying its utility for service and determining what, if any, modifications should be made in the equipment for future locomotives of this type.

Ammeters and voltmeters at each operating position indicate the current of one traction motor and the voltage applied to the traction motor circuits.

A speed recorder is provided to indicate and record the speed in miles per hour and register the total miles traveled.

An ampere-hour meter indicates the state of charge of the battery. The zero point of the scale indicates a fully charged battery and the pointer moves forward or backward to indicate the ampere-hours drawn from or supplied to the battery.

An integrating ampere-hour meter is connected in the battery circuit with two sets of dials, one of which in-

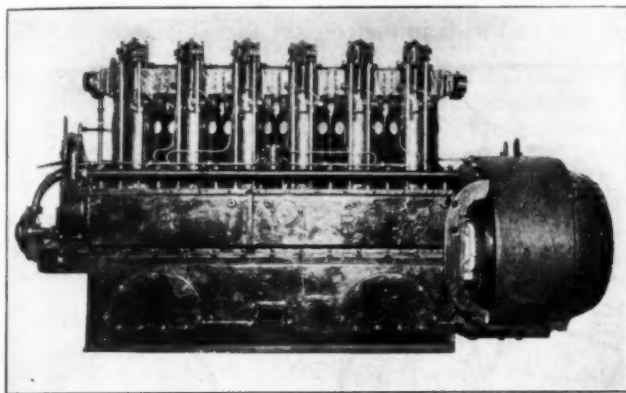
icates the total ampere-hours of discharge and the other the total ampere-hours of charge.

One integrating watt-hour meter indicates the total power passing through the traction motor circuits while another indicates the total power delivered from the engine-generator set.

Engine and Generator

A 300-horsepower Ingersoll-Rand oil engine direct connected to a generator is provided for charging the battery. The generator is built with a drooping characteristic so designed as to match the voltage characteristics of the battery and to furnish power to the traction motors in parallel with the battery under various conditions without overloading the engine, or overcharging the battery. The engine generator set is started by using the generator as a motor running from the battery.

The engine is of the vertical, six-cylinder, four-cycle, single-acting, constant-speed type having direct fuel oil



Oil Engine and Generator

injection. The cylinders are 10 in. in diameter and have a 12 in. stroke. Cylinders, cylinder heads, and combustion chambers are completely water jacketed.

Fuel oil injection is accomplished by means of two opposed spray nozzles in each combustion chamber to which oil is delivered under pressure by an injection pump driven from the main shaft. No compressed air is used for fuel injection. Ignition is produced by the heat of compression only.

One fuel injection pump serves all cylinders. The fuel oil distribution is obtained by a distributor timed to admit oil to the spray nozzles of each cylinder in their proper firing order.

The lubricating system is entirely enclosed and of the forced feed type. Lubricating oil is pumped to the moving parts of the engine by a gear-driven pump in the crank case. Oil in contact with the cylinder walls is passed through a filter and returned to the crank case oil reservoir.

A closed cooling water system is used on the engine. The water is circulated by a centrifugal pump driven from the crank shaft. Radiators for cooling the engine circulating water are located on the roof. These radiators are made in two sections, each furnished with forced ventilation by a motor driven fan.

Storage tanks having a capacity of 200 gallons of fuel oil are provided on the locomotive. These are sufficient to operate the engine at full load for about 10 hours.

The engine is the same one that has been successfully used on a large number of oil electric locomotives, with the exception that on this locomotive it is run at constant speed under the control of the governor.

Weights and Dimensions

The following table gives the approximate weights and dimensions of the completed locomotive:

WEIGHTS	
	Pounds
Locomotive complete	257,000
Mechanical equipment	110,000
Battery	34,300
Motors	36,400
Engine and generator	28,800
Radiators and fans	2,700
Control	18,800
Air compressor and brakes	4,800
Miscellaneous	21,200

DIMENSIONS	
Length over coupler pulling faces	46 ft. 8 in.
Wheel-base	34 ft. 1 in.
Rigid wheel-base	8 ft. 3 in.
Height	14 ft. 8 in.
Width	10 ft. 2 in.
Traction effort one hour rating of motors.....	34,000
Speed at one hour rating—	
18 m.p.h. on external power	
8 m.p.h. on internal power	

Maximum speed	40 m.p.h.
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BATTERY CHARACTERISTICS	
Ampere-hour capacity at six-hour rate.....	680
Average volts at six-hour rate.....	432
K.W.-hour capacity at six-hour rate.....	294
Maximum discharge rate in amperes.....	3,000
Maximum K.W. discharge rate.....	680
Approximate weight of battery, pounds.....	34,300

Frisco Adopts

Decentralized Accounting

THE St. Louis-San Francisco has inaugurated an accounting plan which will permit the receivers and shippers of freight at all of the more important stations to receive current expense bills and, at the smaller stations where errors in rates may be detected, to receive corrected freight bills in three or four days, where weeks or months were required before.

In place of the large central organization in St. Louis, where all freight accounting has been handled heretofore, five freight accounting zone offices are being established. These offices are at Memphis, Tenn., Tulsa, Okla., Kansas City, Mo., and St. Louis and Springfield. Each of these offices, under the direction of a zone auditor, will be responsible for a certain territory, and freight matters will originate and terminate at the zone offices, instead of being forwarded to St. Louis for final accounting as heretofore.

Duplicate work at stations, as well as in the general offices, will be eliminated by performing all revising and checking of interline and local waybills to insure the application of proper tariff rates, in the zone in which those bills belong. Each zone office will be responsible for the freight accounting work of the stations in that zone and 700 operating stations will be distributed among these five zones, about 150 stations to each zone. Each zone office will be equipped with the latest electrical accounting machinery, including sorting and tabulating and calculating machines.

The zone offices at St. Louis, Kansas City, Memphis and Tulsa already have been established, and stations in their respective territories gradually are being added to the zone offices. The Springfield zone will be established on April 1 and Frisco officers expect to complete all zone arrangements by September 1.

Reading Earns \$7.64 per Share

*Although a leading carrier of anthracite, it is also one of country's largest carriers of bituminous—
Strong financial position*

THE Reading Company's annual report for 1927, which was made public on Wednesday of this week, shows net income after interest and other fixed charges of \$13,496,660. This was equivalent after provision for the 4 per cent dividends on the first and second preferred stocks to \$7.64 per share on the \$50 par value common stock. Net income in 1926 was \$18,531,122, or \$11.23 per share. The Reading has been paying dividends of \$4, or 8 per cent, on its common stock since 1913. In December, 1926, an extra of 2 per cent was declared, but this was not repeated in 1927.

The Reading's results do not appear to be greatly out of line with the general trend of railway earnings in 1927. It will be noted, however, that so conservatively is the property capitalized that the reduced 1927 net income lacked only a few cents per share of being double the year's common dividend requirements.

Diversified Traffic

The Reading is in a peculiar position among the railroads in its territory. Although it is known as the country's largest carrier of anthracite, it is also one of the largest carriers of bituminous. As a matter of fact, for the past three years its tonnage of the latter has lacked only a small amount of being about double that of the former. In addition, the company carries a large tonnage of manufactured and miscellaneous products. The anthracite carried in 1927 amounted to 12¾ million tons and was 19.71 per cent of the total revenue tonnage. The bituminous amounted to 22¾ million tons and was 35.03 per cent of the total freight moved. The two kinds of coal combined constituted 54.74 per cent of the total revenue tonnage and yielded 36.21 per cent of the road's total receipts from all sources, inclusive of passenger revenues, income from securities, etc. Manufactured and miscellaneous products totaled in 1927 not quite 16½ million tons, or 24.95 per cent of the total revenue tonnage.

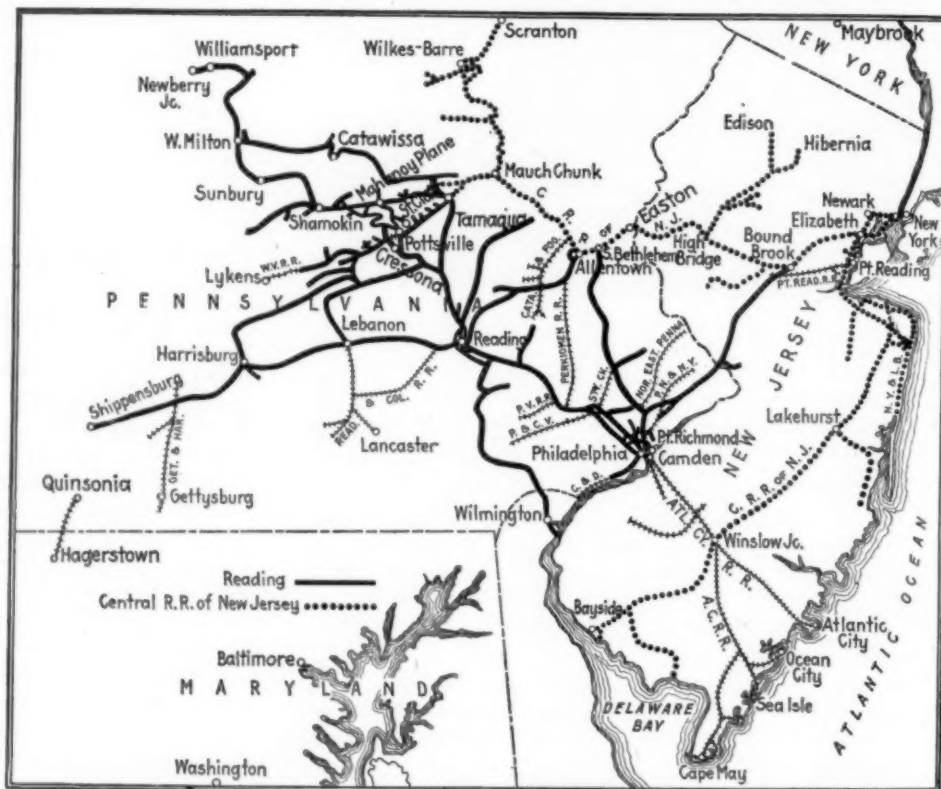
In comparing the results of 1927 with those of 1926, it appears that there was a decrease of 1.62 per cent in the tonnage of anthracite. The 1926 total was reduced by four months of suspension in the industry. That of 1927 was also reduced by a further continuance for two months of the miner's strike combined with a falling off in demand for anthracite due to mild weather and the growing use of other kinds of fuel.

The 1927 tonnage of bituminous showed a decrease

of 9.37 per cent from 1926, but, otherwise, it compared well with the volume of previous years. The bituminous traffic was somewhat enlarged in 1926 because of the British coal strike and the increased export coal movement, principally through Port Richmond, much of which, no doubt, would otherwise have moved through Hampton Roads had not that district been somewhat overcrowded.

The decrease in total revenue tonnage was 7.66 per cent and the decrease in revenue ton-miles 8.41 per cent.

Primarily, the Reading is a terminal railroad. There are few railroads in the country that it is going to prove



The Reading and Its Controlled Lines

more difficult to allocate in the consolidation scheme. At present, the New York Central and the Baltimore & Ohio divide equally between them ownership of one-half the company's outstanding stock. Another large interest is held by the Widener estate, although the shares held by the Wideners total much less than those held by either of the proprietary railroads. There is a general impression that the other railroads in trunk-line territory might be willing to see the Reading allocated to the Baltimore & Ohio. It happens, however, that the commercial interests of Philadelphia have decidedly put themselves on record as much preferring that the Reading remain as at present—an independent terminal property, serving eastern Pennsylvania and with traffic routes open to all that care to make use of them.

Anthracite

The Reading was built to carry anthracite and for the better part of its history its efforts have been devoted to acquiring and developing mining properties that would produce such traffic or protect the future interests of the carrier in that direction. Since the segregation, at the insistence of the government, of the coal properties to the Philadelphia & Reading Coal & Iron Company, its interests have had to be applied solely to its transportation functions. The anthracite which the Reading carries comes from the so-called Lower or Schuylkill Region. There are two principal coal assembly points, one being at Cressona and the other at St. Clair, both of which are in the neighborhood of Pottsville. The coal assembled at the latter point originates largely on the Shamokin division. Mine runs bring it to the foot of the famous Mahanoy Plane whence it is pulled up the 18 per cent grade of the plane two or three cars at a time by stationary engine and cable. Trains assembled at the top of the plane are taken by locomotives down the 5-mile hill—the upper half of which has a 3.32 per cent grade—to the classification yard at St. Clair, which is also a gathering point for coal from the other collieries in its own neighborhood. From St. Clair trains are dispatched to Port Richmond, which is the large terminal development on the Delaware River at Philadelphia; or to other points in the Reading's own populous consuming territory.

Bituminous

The bituminous coal originates chiefly in the Fairmont and neighboring districts in West Virginia and comes mostly from mines on the Baltimore & Ohio. It leaves the B. & O. at Cherry Run for movement over the Western Maryland, or at Martinsburg for movement over the Cumberland Valley. The Reading has arrangements with each of these two roads whereby their engines and crews are enabled to operate as an engine district that portion of their own lines between Hagerstown and Shippensburg and thence over the Reading into the large classification yard at Rutherford, which is east of Harrisburg. The Reading operates coal trains from Rutherford to its tide-water terminal at Port Richmond or to Allentown where a large proportion of the bituminous is turned over to the Central of New Jersey for movement via Phillipsburg and the Lehigh & Hudson River and the Poughkeepsie Bridge route into New England. Some of the bituminous is also turned over to the Lehigh & New England and a considerable share reaches Port Reading, the railroad's terminal at New York the operations of which were described in an article in the *Railway Age* of February 18 under the title "Coal Terminal Renders Unusual Service." Naturally, no small volume of the bituminous is consumed by the industries served by the Reading in eastern Pennsylvania.

In addition to the bituminous received by the Reading at Rutherford, the company also receives a fairly large tonnage at Newberry Junction, Pa., or Williamsport. This comes chiefly from the Buffalo, Rochester & Pittsburgh or the New York Central and presumably would come to the Reading in larger volume were it not for the difficulties the Clearfield district has been having in surmounting the problem of competing with the southern mines. This coal, however, moves over the Catawissa line via Tamaqua and Reading. The Catawissa line, incidentally, is used principally for eastbound loaded tonnage of coal or merchandise trains while the lighter west-bound traffic is handled over the Shamokin district above mentioned as yielding anthracite traffic

to the Mahanoy Plane. The bituminous coming from Williamsport reaches the same general destination as that coming through Rutherford. The Catawissa Branch will be remembered as the line that the New York Central some years ago desired to acquire and join up as a part of a new line including the Central of New Jersey on the east, and reaching Cleveland on the west by means of mileage already in the New York Central's hands.

A Road of Short Distances

The Reading figures include the operation of 1139 miles of line. This is not, however, the entire system. Naturally, it includes all the leased mileage, the amount of which is indicated by the fact that in 1927 the rent for leased roads totaled \$2,824,933. It does not include the Central of New Jersey which is separately operated and the Reading majority control of which is at present, pending the outcome of the consolidation question, in the hands of trustees. Nor does it include the Atlantic City or the Perkiomen, important links in the system which are operated as an integral part of it, but the earnings of which are reported separately.

The Reading is preeminently a road of short distances. Its average haul is only about 100 miles. Its longest engine district—Newberry Junction to Tamaqua—is only 105 miles, while from Rutherford to Allentown is 90 and from the same terminal to Philadelphia, 100 miles. The road has been something of a leader in the matter of turn-around engine runs. Its large tonnage of coal and otherwise praiseworthy operation permitted it to report for the first 11 months of 1927 a gross train-load of 1885 tons, a net train-load of 945 tons or net ton-miles per train-hour of 10,487. The two latter figures compared with respective averages of 1913, 862 and 10,021 for the roads in the eastern district in the same period.

Operating Efficiency

In several of the recent reviews of the operations of railroads in these columns the point has been made that the present tendency in railroad operation has been in the direction of higher freight train-speed made without loss of train-load with the result that increases in traffic have been handled with the same train-miles and with substantially fewer train-hours. The Reading in the first 11 months of 1927 moved 12 per cent more gross ton-miles than in the same period of 1920. It accomplished this result with 1½ per cent less train-miles and with 24 per cent less train-hours. The falling off in traffic in 1927 was presumably the reason for the slightly less favorable ratios of operation than were reported in 1926. The transportation ratio in 1927 was 37.69 per cent; the operating ratio was 77.63 per cent, and the ratio of net railway operating income to total operating revenues was 18.1 per cent. The last compared with an average for the roads in the eastern district of 16.4 per cent.

Conservative Capitalization

Another distinguishing feature about the Reading is its extremely conservative capitalization and the somewhat striking manner in which it has carried on a most substantial program of capital improvements without having found it necessary to issue new securities. The balance sheet as of December 31, 1927, shows that the company now has outstanding \$139,950,950 of stock and \$120,150,363 of funded debt, or a total capitalization of \$260,101,313. The investment in road and equipment, inclusive of improvements on leased railroad property, totals \$332,897,655 and the company's total investments,

inclusive of the foregoing and the holdings of stocks and bonds of affiliated or other companies total over 415 millions. It is not without interest that the company's funded debt is now about 6 million less than it was at the close of the first year—1924—in which it operated exclusively as a transportation property following the segregation.

The company, as it has acquired new equipment from time to time in recent years, has provided for equipment trusts but has for the most part held them in the company's treasury. Thus, the book liability with respect to equipment trust obligations on December 31, 1927, was \$18,155,000, but of these only \$5,825,000 were in the hands of the public.

Additions and Betterments Program

The Reading has reported in the past five years a total of additions and betterments of 40½ million dollars, all financed from earnings or surplus. At the close of 1927, the company's balance sheet showed as a part of its corporate surplus an item "Additions to property through income and surplus" of 90¾ millions and its total corporate surplus was over 101 millions. If it is appreciated that the additions and betterments of the past five years alone were equivalent to some \$29 per share (\$50 par) of outstanding common stock, the Reading's strong financial position will be readily apparent.

Maintenance Standards

The Reading is noted for its high standards of maintenance. A substantial proportion of its mileage has multiple track, while the main lines from Bound Brook, N. J., to Philadelphia; from Philadelphia to Reading, and from Reading to Shippensburg are provided with a considerable proportion of four-track mileage. All the lines carrying much passenger business are rock-balasted.

All ties put in track are treated, and the company has for some time been using tie plates to a considerable extent in its yard tracks and sidings. A feature of the capital improvement program has been the installation of 130-lb. rail. For the past five years the company has been putting in about 30,000 tons of rail of that weight yearly and it is hoped to have rail of that section on all main tracks in about another five years. The contracts were placed in December for 34,200 tons of 130-lb. rail for the 1928 requirements.

It is difficult to enumerate in small space the other capital improvements that have taken place. The company has spent large sums for bridges, generally of concrete. Another large item was the provision recently of a modern car shop at Reading. An important development has been the replacing of viaducts on the Catawissa line, there having been one fill of this kind that amounted to about a million yards. Work is at present progressing on the elimination of grade crossings through Wissahickon and Manayunk, in Philadelphia on the Norristown branch, where an extensive project is underway that is expected to cost about 6 to 8 million dollars, part of the cost of which will be paid by the city. Each annual report of the company has a list of improvements in the terminal facilities at Port Richmond. There was recently completed a new grain elevator at that terminal which cost about 4 million dollars. The company has also recently installed new ore unloading facilities at the same point.

General

The general impression that one gets of the Reading is that it is an excellently equipped property provided with plenty of money with which to improve it further

and that it seems in a very splendid position to carry on even without the coal properties that the company formerly owned.

Book of Rules Education on the Missouri Pacific

SOME months ago, a plan was put into operation on the Missouri Pacific to encourage greater familiarity with the book of rules, which is having beneficial results. It is intended to encourage officers and employees to carry the book of rules with them constantly while on duty and supplements the regular rules examinations.

Each division concentrates on one certain rule every day. At midnight, the office trainmaster announces what the rule for the following 24 hours is to be. This announcement is broadcast to everyone concerned in the handling of trains, by means of individual telegrams and posting on bulletin boards. The supervisory officers, while riding trains or stopping at stations ask employees what the rule of the day is and have them repeat it and explain what it means. Nor are the supervisory officers themselves exempt from questioning. The general operating officers in going over the railway, frequently examine the division officers as to their knowledge of the rule.

Different rules are selected for each division, except in cases where some particular rule has a timely application, such as when the violation or misunderstanding of a rule has caused an accident somewhere on the line. Then the rule in question is broadcast over the railway as the rule for the day on each division, in order that everyone may understand it and so that future mishaps of a similar character may be avoided.

The results have been gratifying. The employees have co-operated whole-heartedly with the plan and frequent rule discussions take place among them. Any confusion or misunderstanding that may exist is brought to light and rectified.

If such misunderstandings cannot be settled by the officers of the division, the question is referred to the committee on operating rules. This committee consists of 11 members, including the two assistant general managers, the general superintendent of transportation, two general superintendents, the signal engineer, the principal assistant engineer, the master car builder, a superintendent and two operating rule instructors. This committee meets three or four times a year, upon call from the chairman, for the purpose of settling disputes and giving official interpretations. The rulings and interpretations of this committee are then printed and circularized among those interested. A looseleaf booklet is provided in which the rulings may be filed.

From time to time bulletins are distributed to all dispatching offices, containing a series of from 60 to 100 questions and answers, dealing with operating rules and the handling of train orders. These bulletins are kept on file in each dispatching office and the dispatchers are required to read them thoroughly and sign them as a certification of having read them every 30 days. The dispatchers are checked closely in this regard and all of them are required to have a thorough knowledge of the contents of the bulletins.

The results of this increased vigilance in the matter of operating rules have been quite apparent in the reduction of accidents, as well as near-accidents.

Senate Committee Queries I. C. C. Rate Policies

*Concludes hearing on confirmation of reappointment
of Commissioner John J. Esch*

WASHINGTON, D. C.

THE hearing before the Senate committee on interstate commerce on the question of confirmation by the Senate of the reappointment of Commissioner J. J. Esch for another term on the commission was concluded on February 24, after six days had been devoted to testimony by members of the commission and lawyers who practice before it regarding its rate regulation policies, with particular reference to the lake cargo case and the question as to whether the commission uses its rate regulating powers to "equalize prosperity" between sections. After three days had been devoted to questioning of Mr. Esch, Chairman Campbell and Commissioner Aitchison and former Commissioner Hall were called at the request of the committee. Luther M. Walter, general counsel of the National Industrial Traffic League, and R. C. Fulbright, chairman of its legislative committee, also appeared to urge the committee not to establish a precedent which would make the Senate an appellate tribunal for disappointed litigants before the commission. A similar statement was made by John E. Benton, general solicitor of the National Association of Railroad and Utilities Commissioners, and A. G. Gutheim, counsel for the coal operators of the Pittsburgh district, discussed some phases of the lake cargo case in reply to the statement made previously by A. M. Belcher, of counsel for the southern coal operators.

All of these witnesses agreed that there never had been a suspicion against the character and integrity of Mr. Esch, but they particularly appealed to the committee not to impair the independence of the commission by withholding confirmation of a commissioner because of disagreement with his decision in a particular case. If the commission's decisions in the lake cargo case are regarded as a manifestation of a policy on the part of the commission to give too much consideration to conditions in an industry aside from transportation considerations, the committee was told, the difficulty is in the directions which Congress has given the commission, particularly in the Hoch-Smith resolution. As a result of the hearings at least one object was accomplished. Some of the senators learned a lot about what is in the resolution which surprised them, although they received almost as many views as to its proper interpretation as there were witnesses, and former Commissioner Hall, who has been regarded as one of the ablest lawyers on the commission, said he did not know what it meant.

Only a few members of the committee attended the hearing but most of the questioning was done by senators from Virginia, West Virginia and Kentucky.

Hoch-Smith Resolution

Mr. Hall told the committee that the Hoch-Smith resolution was certainly part of the law but that like any other law it is necessary to try to understand it before applying it and that he was still puzzled as to how to interpret it in view of the qualifications in it in such language as "in so far as it is legally possible." The second paragraph, referring to the investigation, apparently directs the commission, he said, to do all over again as a single operation what it has been doing for years.

He said he thought the resolution was considered by the commission in reaching its decision in 1927 but that he could not say as to how much it was influenced by it. As to the direction relating to rates on agriculture he said that the interstate commerce act lays upon the carriers the duty of establishing just and reasonable rates but that both the commission and the courts have recognized that there is a zone of reasonableness and that if a carrier has established rates within that zone, which the commission could not otherwise touch, the question is whether under the resolution it can substitute a lower rate, also within the zone of reasonableness. "If the carrier has performed its duty under the law and established reasonable rates," he said, "I have yet to find how the commission can tear them up and require the carriers to do something else."

When Senator Sackett, of Kentucky, asked if there are not two schools of thought in the commission as to whether it should consider conditions in industries, in addition to transportation conditions, he replied that he would not quite say that, but that individual minds may lay more stress on such conditions than others and that the commission considers both the cost of service and the value of the service. When Senator Glass, of Virginia, asked if the commission should consider the question of the administration and operating costs of industry in one section as against those of another he said that personally he had never thought it should but that the Hoch-Smith resolution seems to mean that.

Senator Glass said that if he thought it meant that he would move for its repeal, but he declared that the debate on it in the House indicated that it was "a mere expression of the sense of the few people who proposed it and the few who voted for it, without any debate in the Senate, that rates on agricultural products should be reduced and that it was regarded by its proponents as one of the numerous farm relief measures, while its opponents said it was a fake and a camouflage." Mr. Hall replied that the question is not the intent as expressed in the debate but as expressed in the language of the resolution as passed.

Mr. Hall said that the lake cargo coal case had been on his docket since 1923 and that while he was naturally disappointed when the majority of the commission did not accept his report in 1927, it was a "very carefully prepared and ably fought case on which the minds of men might reasonably differ"; that there was new evidence in the case and that he was satisfied that Mr. Esch had reached his own conclusion on it just as he had. "To say that he could have been moved by any personal influence, real or fancied, in his judgment in a case entrusted to him, is so abhorrent to me that it is difficult for me to speak calmly," he said. "That amounts to an impeachment and impeachment ought to be proved. Where is there any proof? If he is fit you should confirm him, unless you are going to punish him because his opinion differs from yours. It would be profoundly upsetting to the business of the country if it were given to understand that it had a right to appeal to Congress

or the Senate from its decisions. If there is doubt as to what the law is, the thing to do is to clarify the law instead of trying to punish one member of the commission for his interpretation of it."

Regarding the case itself Mr. Hall said that although there were many contributing causes for the shift of lake cargo coal tonnage from the northern district to the southern he was satisfied that the rate was not at fault.

Commissioner Aitchison Speaks Plainly

Commissioner Aitchison said he did not consider that he had "changed his mind" between the two decisions, but that he had voted the second time upon a new record and a new state of facts and that he also thought he understood the case better the second time. The case involves the question of the extent to which differentials should be increased as the base rates are increased, and, with a marked increase in the costs of transportation, it seemed to him that sufficient weight had not been given them in determining the amount of the differentials. Questioned as to the effect of the Hoch-Smith resolution Commissioner Aitchison said that the commission had "called on the public for help" and that 88 briefs were filed as to its interpretation "expressing the most diverse lot of opinions the human mind could imagine." However, he said, the commission is construing it as having the force of law and "as a serious proposition, not a political gesture." "My own interpretation of it," he said, "is that it is a distinct statement by Congress that in the fixation of rates the element of 'what the traffic will bear' shall be given a greater degree of weight than previously." He added that in his judgment the resolution undoubtedly prevented a 5 per cent increase in rates in the western district.

"Did anybody try to influence your decision," asked Senator Hawes. "Not at all," replied Commissioner Aitchison. "Who says I wanted to be reappointed? It is known to my colleagues and to some of you that I have long been restive under this gruelling work and that I could not much longer, in justice to my family, decline attractive offers that have been made me for professional service that would give me more leisure, less criticism, and greater emoluments. I have passed on 10,000 cases and no one has yet had the temerity to make the direct charge that is insinuated here, which I resent."

When Senator Neely asked Mr. Aitchison if he thought the commission had the power to transfer business from one section to another he replied: "Not if that is the purpose, but if the fixation of rates under the mandates of Congress under sections 1, 2, 3 and 4 of the act has that result that is our duty and that is the consequence Congress intended."

Mr. Benton's Testimony

Mr. Benton said that no one who knows Mr. Esch could entertain for a moment the thought that he would vote against his conviction of right for any personal consideration, or for any political consideration, designed to extend his own tenure of office, and that the attack upon him because economic evidence was considered in the case is equally an attack upon every member of the commission, "because no commissioner has ever questioned the relevancy of economic evidence in any case, however much he differed from others about the proper weight and influence to be given it."

Mr. Benton also discussed the Hoch-Smith resolution, saying that it had already been of benefit to agriculture in several cases, and that it had never occurred to him to doubt that Congress intended to give agriculture the "lowest limits of reasonableness" in rates. He said also that it is the commission's duty to refuse to permit reduc-

tions in rates which in its judgment involve unnecessary sacrifices of revenue which might have to be made up on other traffic, because, so long as section 15a is in effect, any reduction in rates tends to increase other rates.

Rates Based on Transportation Conditions

Chairman Campbell denied the contention that the commission on the lake cargo case or other cases has been influenced by a desire to "equalize prosperity" through rate adjustments. He insisted that the commission bases its decisions on transportation conditions but said that the law, as modified by the Hoch-Smith resolution, directs the commission to consider the conditions in industry with a view to ascertaining whether they are the result of the rate structure and to adjust rates so that commodities may freely move. The necessary effect, he said, may often be to transfer business from one section to another, but if it has that effect it is because of the action of law and not of men.

"I take it that Mr. Esch is charged with giving in to political influence," said Mr. Campbell. "But senators have repeatedly said they are in no wise attacking his honesty and integrity. If that is true these charges have entirely fallen because it is not possible for a man to keep his honesty and integrity and at the same time give way to political influence." He added that absolutely no pressure was brought to bear on him relating to the decision and that he was as certain as he could be that there was none against the other members of the commission.

Asked why the commission had reduced the rates from the northern fields in such a way as to increase the differential against the southern fields from 25 to 45 cents, Mr. Campbell said it was done on transportation grounds, because the rates from the northern fields were paying the railroads nearly twice as much per mile as those from the south, and that if the rates had gone up by the same percentage from the two fields since 1917 the differential would have been 53 cents against the southern fields. He was of the opinion that the commission should have fixed the rates from both fields at the same time but a majority did not agree, so the question of the southern rates was left for a new case.

"How can you expect us to agree on the interpretation of the law?" he asked, "when you don't agree yourselves as to its force and effect. You have passed a set of laws and said we must adjust rates so that the carriers as a whole shall have a fair return. Then you passed the Hoch-Smith resolution telling us to consider economic conditions. I believe that is a good law, although it is not as clear in its terms as it might have been. But one of the difficulties has always been the forcing down of rates because of the big stick in the hands of the big shipper. The tendency of rates downward is not due to the commission but to the club in the hands of the big shipper. The resolution was intended to cure just such situations as that in the lake cargo case, so that we might prevent reductions in rates that would reduce carriers' revenues to such an extent that relief could not be given to agriculture."

Mileage Scales

Asked whether mileage is a proper measure of rates, Chairman Campbell said it sometimes becomes necessary to use mileage scales "because there is no other way to stop the constant fights between localities," and that "you are driving us toward a mileage scale for coal," but that he was not an advocate of mileage scales except where they are necessary. If the commission was influenced by economic conditions in the lake cargo cases, he said, it was for the benefit of the southern mines, because under a strict recognition of mileage the rates from the south

would have been increased, but economic conditions are always involved in the question as to what the traffic will bear.

In reply to questions as to whether the shift in tonnage from the northern to the southern fields could be attributed to the rate structure, Chairman Campbell answered: "The shift took place, the rate structure was wrong, and it was our duty to correct the rate structure."

Shippers Want Independent Tribunal

Luther M. Walter, general counsel of the National Industrial Traffic League, said that 38 of the 42 members of its executive committee had voted in favor of an appearance at the hearing to oppose the idea that the Senate should reject a reappointment to the commission because of disagreement with a particular decision. "You now have pending before the commission the other side of the same case," he said. "If you reject this commissioner how could those interested in the case expect to get a decision from the commission independent of the thought of the fate of Mr. Esch? Congress has provided an avenue of appeal to the courts from the decisions of the commission and, as any member of the bar is interested in the integrity of the bench, the members of the league are interested in knowing that their cases are to be decided by the commission on the record before it without fear of political influence."

Senator Sackett denied that the decision in a single case is the issue, saying that the question is whether the commission should consider economic conditions, such as the cost of production and wages in one field as compared with those in another, and try to equalize conditions through an adjustment of rates. Mr. Walter said the commission is not authorized to raise or lower a rate solely because of an increase in cost of production in one field, but it is within its province to have such facts before it.

"The opposition to Mr. Esch comes entirely from the parties litigant before the commission who were defeated," Mr. Walter said. "We want the commission to stand above suspicion so that we can feel it is not going to decide our cases so as to get the votes of senators." When Senator Sackett asked if any body of men should have the power to "make or break communities," Mr. Walter said the power must be lodged somewhere unless it is to be left to the railroads as it was before regulation.

August G. Gutheim, counsel for the Pittsburgh district operators, said that whereas Mr. Belcher had said the commission had been influenced too much by the factor of mileage, it had considered every factor relating to the cost of transportation. Also, he said, although the commission is now criticised for paying too much attention to economic conditions in the coal industry, the southern operators had been the ones to invoke the Hoch-Smith resolution in this case.

Attitude of National Industrial Traffic League

R. C. Fulbright, chairman of the legislative committee of the National Industrial Traffic League, took the stand to answer questions by Senator Neely as to why the league was taking a position in this case but had not in connection with the appointment of Cyrus E. Woods, of Pennsylvania, last year. He said the league has a policy of not taking a position as to individual appointments and that after the impression had got out that the Woods appointment had been sought for a particular purpose it was too late for the league to take action. This year, when it was learned that confirmation of Mr. Esch was to be opposed because of his vote in a particular case, it was decided that the league ought to make known its opposition to the principle that might easily bring about a custom on the part of disappointed litigants of appeal-

ing to their senators or representatives from decisions of the commission. He said he could endorse many of the things said by Senator Neely at the time Senator Reed, of Pennsylvania, was trying to get a "representative" of that state appointed to the commission. Senator Neely interposed to say that "we felt that Senator Reed's efforts to pack the commission or abolish it resulted so successfully that we would have to follow suit."

Many members of the league, Mr. Fulbright said, believe that the commission is giving consideration to too many conditions besides transportation conditions, but that if so the fault is in the law and not a matter for criticism of individual commissioners. A large part of the force of the Interstate Commerce Commission is engaged in the work involved by the Hoch-Smith resolution to such an extent that it is delaying the commission's regular work, he said, expressing the opinion that the resolution "is not doing any good and is not going to do any good." "The commission is not trying to rewrite the geography of the country," Mr. Fulbright said, "and I believe there has been some exaggeration as to the extent to which it has gone, in considering economic conditions, but there is such a tendency and I believe we are going to have more trouble of this kind unless we get rid of the Hoch-Smith resolution. But while you and others are complaining that the commission is giving too much weight to the factor of distance in regulating rates you will find just as many others who complain because it does not give enough consideration to distance."

Kentucky Senator Explains Position

At the conclusion of the hearing Senator Barkley, of Kentucky, made a statement of his position, saying he wanted to dissipate any impression that the fight against Mr. Esch was to be taken as any reflection on his character or integrity or that of any member of the commission, but that he thought it the duty of the Senate, in passing upon appointments, to inquire into the policies of the commission and that there has been a dangerous tendency on the part of the commission to use its rate regulation powers to equalize economic conditions. He said it is almost impossible for Congress to amend the law in such a way as to limit the discretion of the commission and that he thought it better for the Senate to call attention to its "ultra vires" action in the only way it could. He added that former commissioner Hall had done his best to guard against such action by the commission.

Railway Business Association Addresses Senators

Alba B. Johnson, president of the Railway Business Association, has addressed a letter to United States senators relating to the questions of confirmation of Commissioner Esch, in which he says in part:

"Colloquy at the hearing has focused attention upon the question whether Mr. Esch believes the commission to have the power, and should exercise it, to make rate adjustments designed to take business from one region and give it to another. As presented, this general question is complicated with collateral matters. One is the frequent obligation to correct inequity in rate relations, though such adjustment always tends and is intended to shift business. Another is the Hoch-Smith resolution, which was cited in the lake coal decision as requiring rate concessions to a depressed industry whenever within the zone of reasonableness the commission lawfully has discretion.

"For the purpose, however, of the point which I desire to call to your attention, imagine if you can that the commission in some rate case has deliberately and statedly asserted and exercised the power, clearly beyond the sphere of making rates reasonable, to transfer prosperity from one group of producers to another. Sup-

pose, further, that a senator dissents from such assertion of power. What course should he pursue?

"Should he advise against the renomination and oppose the confirmation of the commissioners who voted as complained of, when the term of each expires? Before adopting that procedure the senator might well reflect upon the mischief threatened by such use of political pressure upon a semi-judicial body. In this coal case some remonstrants against the decision have earnestly protested against such pressure, to which they accuse two commissioners of yielding in a change of vote between 1925 and 1927. By their indignation they fully recognize the impropriety and danger of efforts to subjugate the commission. To defeat the reappointment of an individual commissioner as punishment would merely perpetuate the practice which they deplore.

"Suppose, finally, that apart from the constitutional and legal aspects of power as exercised, the senator wishes that the commission might average higher in mental and moral attributes. Will he entertain for a moment the hope of promoting that object by refusing his confirmation vote to a statesman who in Congress and in the commission has served nearly 30 years and whom his leading interrogator at the hearing salutes as a 'high-grade man'? Need the senator hope to aid presidents in winning the acceptance of more high-grade men, to say nothing of higher-grade men, by letting it be seen that they are expected to substitute the desire of litigants for their own judgment on pain of dismissal and may look forward to imputations upon their integrity following each decision between competitors?"

Repeal of Hoch-Smith Resolution Proposed

A bill to repeal the Hoch-Smith resolution was introduced in the Senate on February 28 by Senator Glass, following the commission's decision refusing to allow the southern roads to reduce their rates on lake cargo coal. The bill is S. 3414. He explained that the action was prompted by the contention that the resolution had affected the commission's decision and "in order that the commission may not conveniently use it as an excuse for some other such outrageous decree as it made in the lake cargo case, because if the commission has power to destroy a competing coal industry in one section of the country it has the power to destroy a competing enterprise in any other industry or in any commercial activity."

Co-operative Course in Railroad Operation

THE Boston & Maine and the Massachusetts Institute of Technology have established and have under way a five year course in railroad operation. The Institute will furnish a training in those fundamental subjects which are essential to the understanding of the civil, mechanical and electrical engineering problems met with in railroad operation. Beginning with the summer following the second year at the Institute, the students will alternate their work at the Institute with practical operating experience in the various departments of the railroad, the periods of alternation being equivalent to the regular terms at the Institute. The student, when he is obtaining his practical operating experience on the railroad will not function as an observer, but will learn by actually doing the work himself. This he will be paid for at the rate of approximately 35, 40, 45 and 50 cents an hour during the four

periods which alternate with the Institute terms, and average about 17 weeks each.

In general, emphasis in the course of training will be placed upon the operation, extension and improvement of existing lines, rather than on the construction of new lines; on economical operation of freight and passenger transportation by the use of modern methods and equipment; and on auxiliary means of transportation. The practical experience in railroad service will include one term each in the following departments: Maintenance of way, including signals; maintenance of equipment, conducting transportation and general.

The first section on maintenance of way includes experience in the office of the chief engineer, engineer maintenance of way or division engineer; in the bridge engineer's office or office of inspector of construction; on track work, and in the signal engineer's office.

The term in maintenance of equipment includes experience in the roundhouse, locomotive shops, car shops, operation of locomotives, and in the office of the mechanical engineer or the mechanical superintendent.

The term in conducting transportation includes experience in station work, yard work, freight service, passenger service, freight house operation, car service office and the division superintendent's office.

The term in general work includes experience in accounting, stores (covering also the inspection and testing of materials), and research and special investigation.

This practical experience is to be carefully planned on sound educational principles. During the time that the students are actually working for the railroad they will be required to do a limited amount of study and class work each week under the direction of the Institute staff. To insure thorough co-ordination of the work at the Institute and the practical experience on the railroad, a committee from the railroad will receive the co-operation of an administrative chief and a liaison officer from the Institute, the latter at all times keeping in close touch with the railroad officers and the students.

The course for the Bachelor's degree consists of four years; one full year of post-graduate work will also be offered. The courses started only last fall. The announcement states that "Competent young men, who wish to become railroad operating officers and who are accepted for this course, will receive a training which aims to develop them for responsible positions in the transportation, motive power and engineering departments."

A study of the subjects offered indicates that the students must expect to settle down to good hard work. They will be required at the end of the two terms in the freshman year to take a course at the summer school in foundry, machine tool laboratory, and surveying and plotting, and also at Camp Technology in geodetic and topographic surveying, plane surveying, railway drafting and railway field work. The summer following the second year includes 10 weeks of work at the Institute, the students then transferring to the railroad at the beginning of their third year for the first regular term of 18 weeks. The second term of the third year will be at the Institute, the summer session following the third year on the railroad, the first term of the fourth year at the Institute, and the second term of the fourth year, and the last of the undergraduate course, in railroad service.

ON DECEMBER 14, 1927, a through passenger train running from Harrogate to King's Cross on the London & North Eastern (England), covered 105 miles in 104 minutes, making an average speed of a mile per 59.4 seconds.

Hearings on Automatic Train Control

Signal engineers tell of their experiences—Locomotive engineers favor forestaller

DIVISION 6 of the Interstate Commerce Commission held at Washington this week extended hearings in connection with automatic train control, (including block signaling generally), as announced in its questionnaire sent out on July 22, 1927, the sessions being attended by about 300 men, mostly railroad officers. At least 100 roads were represented, individually, and George E. Ellis, secretary of the automatic Train Control committee, represented the American Railway Association.

The commissioners sitting at the hearings were Messrs. Eastman, Esch and McManamy, with whom was F. E. Mullens, examiner. At the opening session mimeograph copies of a great amount of statistics were given out but the sheets were so large and bulky that little use could be made of them. These included the following:

1. The questionnaire.
2. List of roads using automatic train control, showing miles of road, passenger lines and miles under A. T. C. (automatic train control); cost of A. T. C. and cost of maintenance of same; records of performance, number of train accidents "before and after"; and, for the same roads data concerning automatic block signals, with cost, cost of maintenance, failures for five years and cost of train accidents which ought to have been prevented by signals; all this supplemented by several pages of additional details.
3. Similar data for roads not using automatic train control but using automatic block (roadside) signals, showing kinds of signals, cost, cost of maintenance, volume of traffic, accident costs, and highway crossing data.
4. Data concerning Class I roads having no block signal systems (excluding switching and terminal lines), volume of traffic, speeds, cost of train accidents, and highway grade crossings.
5. Revenues and expenses of Class I roads for ten years, with per cent of expenses (operating ratio).
6. Selected operating items for these 176 roads, including train-miles per mile of road; and
7. Net ton-miles and passenger-miles per mile of road per day; and
8. Train-miles per mile of road per day.
9. Summary of returns of all roads relating to collisions for each year 1906-1926; number of cases, damage to railroad property, etc.
10. Number of train accidents on each road each year 1922-1926; collisions, derailments, miscellaneous, with totals of killed and injured.
11. Summary for three years, 1924-1926, of casualties in train accidents compared with casualties at highway crossings.
12. Number of employees killed and injured each year, 1903-1926, with statement of freight ton-miles and average tractive power of locomotives.
13. Miles of road block signaled, each road, each year, 1913-1927.

In addition to the foregoing, several statements were given out summarizing data, heretofore published, concerning those collisions, which have been investigated by the commissions since July 1, 1911, with brief statements of causes of all of these which occurred on automatic block signal territory.

The first testimony presented was that of signal engineers of roads which have had automatic train control, who were called as witnesses by the commission and questioned in detail regarding their experience with the various devices as well as regarding their intentions as to further installations of train control or block signals.

Signal Engineers' Experiences

H. H. Orr, superintendent of signals of the Chicago & Eastern Illinois, said that that road had had the Miller (ramp) system in use since 1914. Replying to questions, he said that the forestaller was used on all engines and with entire satisfaction, and that there had been no "accidents or near accidents." Sleet on ramps in very cold weather had caused some undesired stops.

George H. Dryden, signal engineer of the Baltimore

& Ohio, summarized his conclusions from three years' experience with the General Railway Signal Company's intermittent inductive system on the line between Baltimore and Washington and 1½ years between Baltimore and Philadelphia, a line of heavy traffic, 124 miles, double track. The forestaller gives satisfactory service in every respect. There have been no accidents (though two in A. T. C. territory had been erroneously reported to the Commission). There are still too many unnecessary stops, due to various faults; but this record is being reduced. Equipped locomotives are run through over long stretches of territory where no roadway apparatus exists and stops are caused by metal masses on the roadway, and by faults on the locomotive. The A. T. C. apparatus might be cut out on this unequipped territory but the operating department has concluded that for efficient inspection the locomotive should be kept always "alive."

Mr. Dryden was asked to compare the G. R. S. system with others but would only say that his road today had a system as good as any. Pressed for details he said that his knowledge of the behavior of other systems was gained from conferences with signal engineers. Of causes of unnecessary stops, irregular current supply on the locomotive was a prominent one. Asked to justify the non-use of speed control, he said we are warranted in depending on the two men in the locomotive cab, for protection in case of any failure of apparatus where the intermittent system may be called theoretically inferior to speed control systems, as used. The Baltimore & Ohio has no difficulty using two systems of A. T. C. on the same line, the Union and the G. R. S. (as is necessary where Reading locomotives run over B. & O. tracks).

W. J. Eck, assistant to vice-president, Southern Railway, told of the extensive introduction of automatic train control by that company within the past two years (857 locomotives equipped), much of the mileage being outside that ordered by the government to be equipped. His first installation has been in use three years, and this and all the others give satisfactory service. The system is the same as that on the Baltimore & Ohio and his conclusions were substantially the same as Mr. Dryden's. The Southern's A. T. C. lines have already been traversed by trains to the extent of 28 million miles. There have been comparatively few undesired stops, not many locomotives being required to run over unequipped territory. There have been two accidents to trains equipped with A. T. C., neither injuring any person. In one case the engineman frittered away the air pressure, and lacked brake power. The fireman had in error called "clear" at a signal which was not clear. In the other the engineman, functioning properly at the caution signal, ran too fast at the home signal. The Southern contemplates the introduction of automatic train control on the line from Louisville, Ky., to St. Louis, Mo. The company's expenditures throughout its system on this improvement, in about two years, have aggregated \$8,000,000 in addition to \$5,000,000 spent on roadside visual signals.

J. A. Peabody, signal engineer of the Chicago &

North Western, reported on the G. R. S. continuous automatic train control system used on 350 miles of C. & N. W. double-track; the only important installation of the G. R. S. continuous system in use anywhere. Though the system is two-speed or three-speed control, the engineman is required to acknowledge at each adverse signal. He must do this and limit his speed according to the following rules: passenger, limit 70 m.p.h.; warning indicator, 67 m.p.h.; highest normal speed, 65 m.p.h.; Freight, limit 50 m.p.h.; warning, 47, highest normal 45. Low speed (passenger or freight), limit 20, warning, 17, highest normal 15. Running below 17 m.p.h. the engineman must acknowledge every half mile. At the suggestion of the I. C. C. inspector, this road has added light signals in the cab, two colors only; green for clear and yellow for caution. On this line (between Chicago and Council Bluffs) the automatic wayside signals, Hall enclosed disks, have been taken out, leaving the engineman no indications between interlockings except the cab signals. Asked if there had been any accidents because of A. T. C. or if traffic had been "slowed up," or trouble from foreign currents, or many undesired stops, Mr. Peabody answered all in the negative. The North Western has no A. T. C. on single track but is planning to install it for use in both directions on a third track of a three-track line. There has been one false-clear operation. The headlight generators first used were unsatisfactory and new ones had to be put in.

If the A. T. C. apparatus on a locomotive fails on the road, the train may be moved at low speed to the first telegraph office, where the train dispatcher must be notified. On his approval the conductor, using a key which he carries, may cut out the apparatus and run the train without automatic control to such point as the dispatcher may designate, to procure another locomotive.

Tuesday's Session

The first to testify on Tuesday was H. G. Morgan, signal engineer of the Illinois Central. This road has in operation 122 miles of double track and 97 miles single track. On the double track, visual wayside automatic signals (semaphores) were taken out and on the single track, where there were no semaphores, none were installed. The system is the Union continuous inductive stop. The forestaller is used and is deemed essential. Speed control was tried on ten locomotives and rejected because complicated; the stop was preferred because simpler. No accidents or "near accidents" have occurred because of use of forestaller.

Questions as to cost and cost of maintenance elicited answers (from this and other witnesses) which gave only approximate and incomplete information. On the double track, the disuse of semaphores was followed by dismissal of one helper each 20 miles. Undesired stops about six a month, with record improving. False clear operations (no collisions) seven; four from one cause; all due to mistakes in wiring or other faults not chargeable to the system.

Question: Is apparatus delicate and complicated?

Answer: As simple as we can find for a continuous system. Enginemen like the system, and appreciate cab signal (which is both audible and visual) when running in fog.

Whether train control or train stop is better Mr. Morgan expressed no preference.

Thomas S. Stevens, signal engineer of the Atchison, Topeka & Santa Fe System, reported on 175 miles, double track, all equipped with automatic train control

for each way on each track; and there are no wayside automatics. (Formerly the manual block system was used.) Distant signals at interlockings have been taken out. The system is the Union three-speed continuous control. No forestaller, but enginemen acknowledge at adverse signals; after acknowledging they may run at 20 m.p.h. past caution signals. Cab signal is visual, not audible.

As to the non-use of wayside automatics, the results are characterized as "very good." Enginemen like the present arrangement. The Union System was adopted after considering results of the experimental installation on the Pennsylvania at Lewistown. Enginemen are enthusiastic in their praise of the system.

Question: Any buckling of trains?

Answer: Some at first, none now.

Comparing three-speed and two-speed, Mr. Stevens would not condemn the latter. If any further automatic train control were to be installed by the Santa Fe he would be in favor of retaining speed control. At present the management would prefer to spend money for wayside automatics rather than A. T. C. There have been two false clear indications (in two years). The speed recorder is efficient. The use of audible cab signals is not favored; audible signals tempt men to sleep on duty. Witness agreed, however, that enginemen and firemen are not liable to that fault, and he would not strenuously oppose the use of an audible cab signal.

The Santa Fe proposes to install automatic visual block signals this year on 428 miles of road, which will make its total 2,189 miles. Since 1922 the expenditure of the signal department for new work has been \$8,309,100. Use of block system and A. T. C. for both directions on both tracks is highly satisfactory and postpones the need of a third track. The A. T. C. has cost \$10,000 per mile of road, including locomotive equipment.

E. A. Hadley, chief engineer of the Missouri Pacific, described the 50-mile section of his road between Kansas City and Osawatomie, where trains are run by signal indication alone. On this section (already familiar to readers of the *Railway Age*) the National Safety Appliance Company's intermittent magnetic A. T. C. is used; now two and a half years in service. Forestallers are not used; the necessary reduction of speed at an adverse approach signal affords all the advantages of forestalling. This 50-mile installation defers for many years the need of a second main track. No false clear indications; few undesirable stops; no difficulty as to permanency of permanent magnets. The Missouri Pacific needs automatic wayside block signals more than it needs A. T. C.

L. Wyant, signal engineer of the Chicago, Rock Island & Pacific, reported on the Regan ramp type stop in use (most of it) four years. With this system the fireman forestalls. Total mileage double track, 127, single track, 110. On this 237 miles of road the Rock Island has abolished the rule requiring trains to stop at adverse automatic roadside signals; if the way is seen to be clear the train may proceed under control, as is done with "tonnage signals." By this it is estimated that, per year, 52,888 unnecessary stops have been avoided—48,216 freight and 4,672 passenger. Formerly with lighter locomotives and more trains there was a greater saving. The money saved by this improvement is large, but no definite sums were named. The Rock Island reports no buckling of trains, no more trouble from ice and snow with ramps than with semaphores, etc. As to snow, "experience satisfactory." Mr. Wyant would

not hesitate to get along without the wayside semaphore. False clear indications at ramps, five; all in the early years.

Locomotive Enginemen Testify

At this point the questioning of signal engineers was suspended and the Commissioners listened to some locomotive enginemen of the New York Central System: Messrs. Rose, Syracuse-Albany; Frantz, same; Downie, Boston & Albany; Wade, Michigan Central; Lux, New York Central West; Nelms, C. C. C. & St. L.; and Spangler, Pittsburgh & Lake Erie. All except the last use the G. R. S. automatic stop with forestaller, the P. & L. E. using the Union intermittent. Questions asked were about the same to each and all, and their answers were mainly alike. All of them run fast and heavy trains, but Mr. Downie told of experience with freight trains of 60 cars on 1½ per cent descending grades, where carelessness in not forestalling would entail serious delays, as an unnecessary stop would necessitate turning down and then turning up the pressure-retaining valves on all the cars.

All of the enginemen like the forestaller; it insures better attention to duty. They have no light signals in the cab and prefer not to have any as they fear that such signals might keep them from keeping a proper lookout. To proceed after an automatic stop, the engineman must get down and reset the apparatus from the ground. Mr. Rose could not see why the engineman should not be trusted with a reset valve in the cab. If on a narrow trestle with the reset valve inaccessible, an engineman, by breaking a seal, could cut out all apparatus and draw the train forward.

Those who were questioned as to vigilance of firemen in case an engineman neglected to forestall, thought that they would do their duty as monitors.

On the Pittsburgh & Lake Erie the use of the forestaller is accompanied by the ringing of a gong.

J. S. Albright, road foreman of engines, New York Central, testified that N. Y. C. runners were unanimous in their favorable opinions of the G. R. S. train control system as used by them. Questioned as to their experience with the reset valve on outside rear of tender he said no complaint had been heard.

D. B. Fleming, assistant general manager, N. Y. C., (Syracuse) told of general results. At first there were undesirable stops (and one case of train buckling), but now practically none at all; this is no longer a subject of conversation. One false clear indication was recorded but witness did not class it as such. Asked as to putting the reset button in the cab, he said it would then be difficult to check the practice of enginemen.

H. S. Balliet, engineer of automatic train control, New York Central System, presented a written statement reviewing that road's doings in automatic train control. Experiments were begun far back, and by 1917 twelve different devices had been actually tried; today 4402 miles of track and 1746 locomotives are equipped and expenditures (including some new automatic semaphores) have amounted to over \$5,000,000. The Electric division (New York to Harmon) is yet to be equipped. Extensive use of other roads' locomotives (Pennsylvania and C. & E. I.) on N. Y. C. tracks has been managed with no trouble. Like all the preceding witnesses, Mr. Balliet reported no slowing of traffic, no trouble from forestalling, and only one case of an inoperative indicator. The New York Central is satisfied that it has made a great improvement.

Questioned as to the reset button on the tender Mr.

Balliet could not recommend any change although he had made a thorough study of the problem as presented by advocates of putting it into the cab.

W. F. Zane, signal engineer of the Chicago, Burlington & Quincy, which uses the Sprague intermittent inductive train stop (of which the older of the two installations has been in service 22 months) has had no trouble with forestalling; trains could not make reasonable time without this device. General results, very good; no false clears. There was one case of train buckling, where train was improperly made up and improperly handled. Mr. Zane emphasized the need of uniformity as between different roads. The art is still in the development stage. The Burlington has as good a system as any, but, if called upon today to make additional installations of A. T. C., it would not know what style to adopt. It has had to provide costly equipment for locomotives using only five miles of another road. In big union terminals A. T. C. is today out of the question.

Following this testimony by signal engineers who were called by the commission, the way was open for individual roads to present any additions to or comments on what they had sent to the commission in response to its questionnaire; but Fitzgerald Hall (N. C. & St. L.) speaking for the railroad representatives, requested an adjournment to permit a study of the data which had been put into the record by the commission and Commissioner Esch announced that the request would be granted. He named April 23 as a tentative date.

Just before adjournment W. H. Bonneville, attorney for the commission, put into the record a statement showing the net railway operating income of each of the 168 roads made respondents in the proceeding, explaining as he did so that the purpose of many of the exhibits was to form the foundation of a record as to each of the 168 roads as 74 of them had never had a hearing. Forty-nine roads, those against which the first order was issued in 1922, were given a hearing, he said, and 44 more roads were given a hearing in 1924, but the commission had felt that a full hearing should be given to each of the 168 respondents.

* * *



Wide World

The Queen's Car in the English Royal Train

Why the Railway Supply Man?

*Broad view of his service to transportation progress
presented before Western Railway Club*

ABOUT 300 members and guests of the Western Railway Club enjoyed one of the most novel and valuable of recent programs when the club held its regular monthly meeting, Monday evening, February 20, at the Hotel Sherman, Chicago, to consider the subject, "Why the Supply Man?" The meeting was presided over by President W. G. Black, mechanical assistant to the president of the Erie, who, after his introductory remarks, requested J. Will Johnson, senior vice-president of the Pyle-National Company, Chicago, to serve as acting chairman during the business session. The principal address was presented by George E. Haas, Chicago representative of the Pyle-National Company, subsequent remarks being made by a number of well known men in the railway supply industry. At the close of the discussion, a highly realistic impression of the Baltimore & Ohio centenary pageant, "The Fair of the Iron Horse," was given by means of a moving picture.

Mr. Black's Remarks

In introducing the subject of the evening Mr. Black said that supply men or "peddlers", as they are popularly and often affectionately called, are generally expert in some field relating to the problems of operation, and their knowledge, freely given, is welcomed by all progressive railroad officers. He said that these men are the agents of industries in which millions are invested and which are engaged in research and development work of great magnitude, indicating that the development of devices and appliances, and research in the application and use of materials are absolutely essential to modern progress.

Regarding the real function of the supply industry, Mr. Black said, "This is so largely an age of specialization that it is almost self-evident that the supply industry is essential to progress in railroad development. The great advances which have been made in the design and construction of rolling stock have, of necessity, resulted in a high degree of specialization necessary to its maintenance. It therefore logically follows that the development of means for improving efficiency in the construction and operation of equipment must be left to those agencies which are prepared to provide an equal degree of specialization in design, in research, and in the practical application and utilization of such means." He concluded his remarks with the following paragraph:

"It is generally conceded that the immense strides made in reducing the cost of transportation in the United States have been in a large measure due to the skill and enterprise with which the material necessities of the railroads have been met by the supply industry, and problems arising in connection with these necessities so generally solved. To the supply man, who personifies the industry, is due this acknowledgment of the part he has played in the creation of our great transportation systems, and to him should go all co-operation and encouragement in the interests of cheaper and better transportation."

Mr. Haas reviewed briefly the development of transportation from early to modern times and showed how the supply industry, by a parallel development, has been

enabled to meet the railroad demands for material and supplies, devices and appliances. Referring to railroad development, he said, "The wonderful progress we have witnessed has been made possible by scientific research and development, and the supply man of today has an important part in this scheme of things, from the fellow in the mines and forests, through the mills, foundry, laboratories and manufacturing plants, and finally to the salesman who presents his card at your office rail and says, 'My dear sir, we have something you should know about.'"

"This fellow who comes to your office and requests admission to your presence, however, is not the supply man I'm talking about.

"He happens to be the one you know best; but he is only the representative and spokesman of the army in the trenches."

Industry Is Large

Mr. Haas here called attention to the magnitude of the railway supply industry which is estimated to consist of 580 individual manufacturing and supply companies, 6,700 sales representatives and service engineers, and a total force of men in factories and associated industries of 1½ million men, or two million men as estimated by Alba B. Johnson, president of the Railway Business Association in the *Railway Age* of January 1, 1927. Referring to this large group of men, Mr. Haas said, "In this army, we can see financiers, executives, inventors, engineers, department heads, foremen and individual artisans. These are the supply men who are behind the supply man you know. It's from them that the fellow you know inherits his standing and knowledge.

"Only a month ago I heard C. C. Farmer of the Westinghouse Company tell you, from this platform, some interesting things that you probably never knew before.

"Among the things he told you was the fact that the Westinghouse Company spent nearly a million dollars annually in development and research. He did not mention service and educational work.

Railroads and Research

"Has it ever occurred to you that every railroad supply company spends proportionate amounts for research and development in keeping with its business activity?

"You and everyone in this country benefit by these expenditures for development service and education.

"When I say that the supply man is the friend who helps you solve your problems and shares your responsibilities, I think I am well within the facts.

"Of course, the thought occurs to you that you pay for this research, development, service and education.

"Of course you do; you would not permit it to be otherwise. Your understanding of business principles and your fairmindedness tell you that it could not be otherwise.

"I can only hope to impress you with the facts regarding the relationship of the supply organizations and your own organization.

"The fact that the supply fraternity is theoretically

the research and development departments of your organization.

"The fact that they are doing what you would necessarily have to do for yourself or forfeit your progress; and that you would have to pay for it in either event.

"Have you ever stopped to consider the enormous investment involved in the industries from which you draw your supplies and devices?

"Do you realize the responsibilities that would be inherited by your organization if you were to assume the development and manufacture of all these details?

"Have you ever considered the enormous capital expenditures, the departmental details, the tremendous increase in staff, the delay, loss and duplication involved in small unit production?

"This, I know, you have, and it's another reason for the 'why of the supply man.' It's the major reason why the general scheme of things is just as it is."

Mr. Hass closed his remarks with the following description of the supply man who represents commercial and manufacturing organizations so essential to the proper growth and development of transportation service:

"He was not conceived or created. He is the product of evolution.

"He has evolved with the advance of civilization just as the railroads and the science of railroading has evolved.

"The railroads have not inherited the railroad supply man. He has not crashed into your midst.

"We have been associated since the beginning.

"We were born of the same parents, necessity and evolution.

"We are like Siamese twins—connected in such a vital way that we cannot be separated without fatal results to both.

"The same vital forces that nourish one nourish the other and the correlation must some day be fully appreciated and acknowledged."

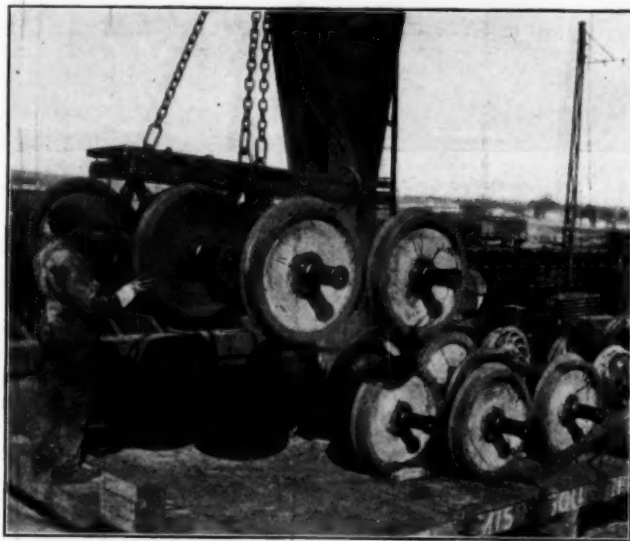
Wheel-Grab Speeds Carloading Operations

MATERIAL handling operations at North Little Rock, Ark., on the Missouri Pacific, have recently been improved upon by the introduction of a device for unloading and loading wheels. The device is an invention of W. W. Reeder, general foreman of stores, to improve upon the operation of a gantry crane installed there. The latter is a 15-ton facility which extends the entire length of the material yard for use principally in loading and unloading heavy castings, sheet steel, wheels and others materials for outside storage. This crane was built to reduce the cost of handling material and has proved efficient, but the practice of loading a single pair of wheels with it caused lost motion which it was desired to eliminate. The success has been indicated by the fact that the road is now making one of the devices for each point on the system operating wheel presses.

Grappling Hooks on Frame

The device consists of a series of grappling hooks on a frame which releases or locks the hooks in position on several axles more or less automatically. There are two hooks for each axle handled. These hooks engage the axle at the center and the mechanism is such that the hooks open when the frame comes to rest on the axles. Fastened to the frame is a sliding carriage which hooks on the axles when it is shifted. This car-

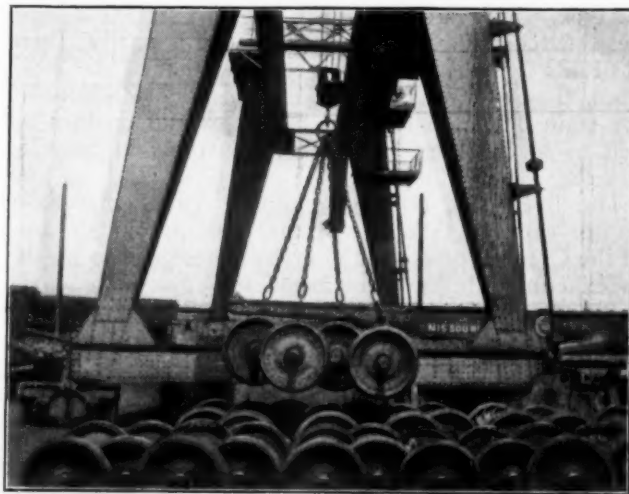
riage is supported on four rollers and can easily be operated from either side or end by means of a rod and small cable. When it is desired to leave any pair of wheels on a track or platform and pick up the other wheels in a set without handling, this is accomplished



The Close-Up of the Wheel Grab

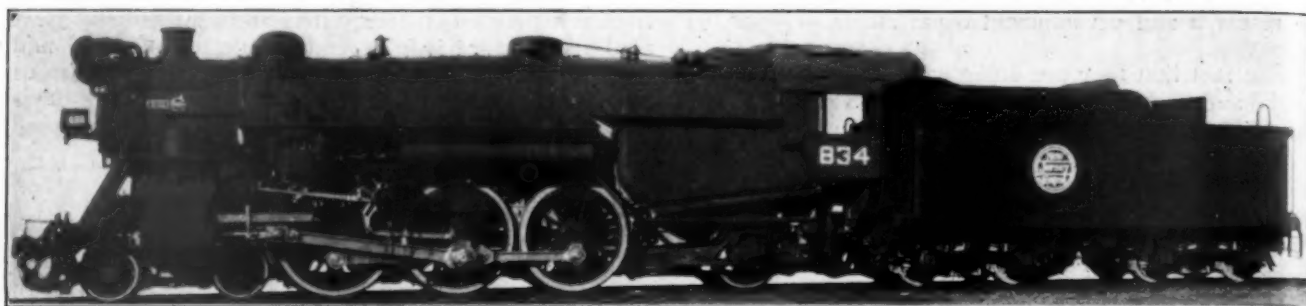
simply by fastening the axle hooks above this pair in the open position.

The number of wheels to be handled depends entirely on the capacity of the hoisting machine. The pictures show a device large enough to handle three sets of wheels at a time, while at present such a device is being manufactured to handle 10 pairs of wheels at a time. A steam crane of the converted steam shovel type required 30 min. to unload one car of wheels while the gantry crane with this device unloaded and reloaded the same car of wheels in nine minutes, using one man less for the purpose. A locomotive crane with the de-



Hoisting Wheels with Reeder Device and Gantry Crane

vice shown in the photos loads and unloads one car of wheels in 12 min., the extra amount of time being attributed to inability to "spot" the crane as easily as the gantry crane. Under present operations at Little Rock, using this device and the gantry crane, wheels are released instantly by one man who also "spots" the wheels in their correct position on the cars or tracks.



4-6-2 Type Locomotive Built for the Central Railroad of New Jersey by the Baldwin Locomotive Works

Passenger and Switching Locomotives for the C. R. R. of N. J.

*4-6-2 and 0-8-0 types purchased to meet demand for greater
capacity in passenger and yard service*

TEN heavy switching locomotives of the 0-8-0 type and five passenger locomotives of the 4-6-2 type were recently delivered to the Central Railroad of New Jersey by the Baldwin Locomotive Works. The switch engines represent the latest development of a general design of eight-wheel switchers which have been used on the C. R. R. of N. J. for heavy switching and transfer service since 1912. Among the classes of service to which they have been assigned is the switching and make-up of trains in the classification yard at Elizabethport, N. J., the handling of heavy cuts of loaded hopper coal cars being moved onto the docks at Jersey City, particularly at pier 18, and in heavy hump yard service in the large freight yard between Bethlehem, Pa., and Allentown. In these classes of service, they are frequently required to handle the heaviest trains brought into the yards by locomotives of the 2-8-2 type, which have a tractive force of 63,000 lb. As these switchers have been designed with a tractive force of 61,422 lb., which is nearly equal to that of the 2-8-2 types, they are well equipped to handle satisfactorily any train delivered to them by these road engines, as well as to handling heavy tonnage trains in transfer service.

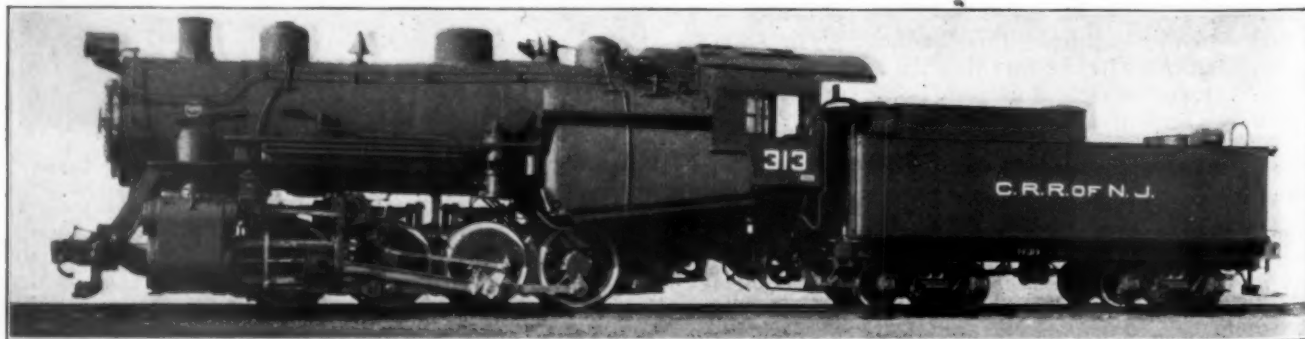
The five 4-6-2 type locomotives are of materially greater capacity than any of that type previously used on the C. R. R. of N. J. They were designed to handle on exacting schedules the heaviest through passenger traffic on this line. This includes such trains as the "Queen of the Valley" between Jersey City, N. J., and

Harrisburg, Pa., a run of 179 miles, made in 4 hr. and 50 min., eastbound, and 4 hr. and 57 min., westbound, and the through Philadelphia-Scranton express trains which operate over a ruling grade of 59 ft. to the mile westbound between Mauch Chunk, Pa., and Penobscot, with a ruling grade of 96 ft. to the mile, eastbound between Wilkes-Barre and the summit at Penobscot.

Switchers Develop Tractive Force of 61,422 Lb.

The cylinder and driving wheel dimensions of the switching locomotives are the same as in previous locomotives of the 0-8-0 type on this road, but the boiler pressure has been raised from 200 to 230 lb., giving a tractive force of 61,422 lb. compared with 53,411 lb. for previous designs. These switchers have been designed to traverse curves as sharp as 30 deg.

The boilers have been designed with an exceptionally large grate area, suitable for burning a mixture of fine anthracite and bituminous coal. The inside length of the firebox is 121 $\frac{5}{8}$ in. and the inside width is 108 $\frac{1}{4}$ in., giving a grate area of 91.43 sq. ft. The boilers are of the wagon top type, radially stayed with a sloping back head. Open hearth steel plate is used for the boiler shell, the first course is 78 $\frac{1}{8}$ in. outside. It is straight and is 13/16 in. thick, while the second course is $\frac{7}{8}$ in. thick, tapered to 83 $\frac{3}{8}$ in. outside diameter at the back end. A one-piece pressed steel dome of 1 $\frac{3}{8}$ in. thick material is located on the second boiler course. There are two 16-in. diameter fire door openings. A fire brick arch supported on 3-in. tubes is used, and a



Eight-wheel Switcher—Tractive Force 61,422 lb.

Type A superheater with 34 units has been incorporated in the design.

The throttle valve used on these locomotives is of the Chambers back head type. Carbon steel main frames are used, suitably braced with cast steel bracing and the pedestals are provided with bronze shoes and mild steel wedges. Five of these switchers are equipped with the Detroit force feed lubricators and the remaining five with 16-ft. Nathan mechanical lubricators. These locomotives are also equipped with the Detroit four feed flange oilers.

Steam distribution is controlled by piston valves 13 in. in diameter, actuated by the Walschaert type of valve gear. An Alco power reverse gear is employed.

Cast steel piston centers with a removable cast steel follower are used. The piston rods are of open-hearth carbon steel made to A. R. A. specifications. The cross-head bodies are of cast steel, fitted with bronze cross-head shoes, and are of the alligator type. The main and side rods are of open hearth steel and both the back ends of the main rods and the main pin connections of the side rods are equipped with floating bushings. Rod grease cups of large capacity are provided, forged solid and integral with the rod ends.

Among the specialties used on the switching locomotives, not previously mentioned, are the following: Cast iron grates with steel supports; chrome-silica-manganese driving springs and carbon steel tender truck springs; Commonwealth cast steel tender frame; Scullin steel tender truck side frames and cast steel bolsters.

While the 4-6-2 type locomotives are similar in a general way to a previous design of the same type, a number of important changes have been made in the design of the details which, together with the addition of various special appliances, has decidedly increased their power and efficiency. When compared with the previous 4-6-2 types purchased by the C. R. R. of N. J., the new locomotives carry a boiler pressure of 230 lb. per sq. in., instead of 210 lb. per sq. in.

The total weight of the new 4-6-2 type locomotives, loaded, is 326,470 lb. as against 306,000 lb. for previous locomotives of the same type and the weight on the drivers is 197,660 lb. instead of 196,000 lb. The sizes of the cylinders and drivers remain the same, the cylinders being 26 in. by 28 in. and the drivers 79 in. diameter over the tires. But on account of increased boiler pressure, the tractive force of the new Pacifics is 46,840 lb. compared with 42,768 lb. for the previous ones.

The boiler of the new 4-6-2 types is of the conical type and by reason of the increased pressure, the thickness of the third boiler course has been increased to 15/16 in. instead of 7/8 in. on the earlier 4-6-2 type, but the first and second courses remain as before, 13/16 in. and 3/8 in., respectively. The first course is straight and has an outside diameter of 78 in. while the second course is tapered to 86 1/4 in. outside diameter at the rear end, and the third course, on which a one-piece pressed steel dome is located, is straight and has an outside diameter of 88 1/8 in. In order to keep within weight limitations, the inside width of the firebox on the new Pacifics was made 96 1/4 in. instead of 108 1/4 in. as on the earlier design, but the inside length of the firebox remains the same, 126 3/8 in., giving a grate area of 84.3 sq. ft. compared with 94.8 on the former.

The firebox has a sloping throat sheet and a 36-in. combustion chamber, and is equipped with three Thermic syphons and three arch tubes. The new 4-6-2 types are fired with a standard Type B stoker. A Type A superheater with 36-in. units is used.

Steam distribution is controlled by 13-in. piston valves actuated by the Walschaert type of valve gear. The Alco power reverse gear is used.

Like the switch engines, the back end of the main rods and the middle connections of the side rods are equipped with floating bushings and the large grease cups are forged solid and integral with the rod ends. Box type guides of forged steel with removable bottom wearing strips are used with an underhung type of crosshead of light design. The pistons are steel castings of light section; and the piston rods, which are 5 in. in diameter, are heat treated and hollow bored. Fifty-five per cent of the weight of the reciprocating parts is counterbalanced and the machinery throughout has been especially designed for high speed service.

Other specialties included in the design of the new 4-6-2 types not heretofore utilized by the C. R. R. of N. J. on this type of locomotive are an Elesco feed-water heater which has the feed pump located on the left side of the boiler near the front end, a Nathan eight-feed mechanical lubricator of 20 pt. capacity; Commonwealth top equalizer, four wheel, swing motion, integral pedestal type of cast steel tender trucks arranged for clasp brakes, and a Commonwealth cast steel type of engine truck with pedestals cast integral with the frame; a cast steel center plate supported on hear-shaped hangers, main locomotive frames of vanadium cast steel. The trailer truck is of the Commonwealth Delta type. These locomotives are also equipped with Chamber's back head throttle valve; automatic drifting valve; chrome-silica-manganese driving and truck springs; and with the Union Switch & Signal Company's coded continuous automatic train control.

A Commonwealth one-piece cast steel water bottom tender frame is an innovation on these locomotives. The tender frame is so designed that the side sheets fit snugly into a recess extending the length of the tender frame, giving a smooth, tight joint, with the side sheets coming flush with the side of the steel underframe. The joint between the side sheet and the frame cannot be discerned when the tank is finished and painted, giving the tender a very neat appearance.

The passenger locomotives are attractively finished Dark Nile green has been used for painting the boiler jacket and cylinder jackets and casings, as well as the cab and tank. An innovation has been introduced in the lettering of these locomotives that adds much to their appearance. Instead of the yellow lettering heretofore used on the C. R. R. of N. J., aluminum-colored lettering has been adopted with 10-in. figures of this color on the sides of the cab, and the rear of the tender, while instead of lettering the initials of the road along the side of the tank, these locomotives have the New Jersey Central emblem in aluminum color, 36 in. in diameter, located on each side of the tank.

Table of Dimensions, Weights and Proportions of the Central of New Jersey 4-6-2 and 0-8-0 Type Locomotives

Railroad	Central of New Jersey	
Builder	Baldwin Locomotive Works	
Type of locomotive	4-6-2	0-8-0
Service	Passenger	Switching
Cylinders, diameter and stroke	26 in. by 28 in.	24 in. by 30 in.
Valve gear, type	Walschaert	Walschaert
Valves, piston travel, size	13 in.	13 in.
Maximum travel	6 1/2 in.	6 1/4 in.
Outside lap	1 1/4 in.	1 in.
Exhaust clearance	3/4 in.	Line and line
Lead in full gear	3/4 in.	3/4 in.
Weights in working order:		
On drivers	197,660 lb.	255,100 lb.
On front truck	65,850 lb.	
On trailing truck	62,960 lb.	
Total engine	326,470 lb.	255,100 lb.
Tender	217,000 lb.	171,300 lb.
Total engine and tender	543,470 lb.	426,400 lb.
Wheel bases:		
Driving	13 ft. 10 in.	15 ft. 3 in.

Total engine	36 ft. 8 in.	15 ft. 3 in.
Total engine and tender	72 ft. 2 in.	54 ft. 6 3/4 in.
Wheels, diameter outside tires:		
Driving	79 in.	55 in.
Front truck	36 in.	
Trailing truck	55 in.	
Journals, diameter and length:		
Driving, main	12 in. by 14 in.	11 1/2 in. by 12 in.
Driving, others	11 in. by 14 in.	10 1/2 in. by 12 in.
Front truck	7 in. by 12 in.	
Trailing truck	9 in. by 16 in.	
Boiler:		
Type	Conical	Conical
Steam pressure	230 lb.	230 lb.
Fuel	Bituminous	Fine anthracite and bituminous
Diameter, first ring, outside	78 in.	78 3/4 in.
Firebox, length and width	126 1/2 in. by 96 3/4 in.	121 3/4 in. by 108 3/4 in.
Arch tubes, number and diam.	3—3 in.	5—3 in.
Syphons	2	None
Combustion chamber length	36 in.	None
Tubes, number and diameter	251—2 in.	208—2 in.
Flues, number and diameter	36—5 1/4 in.	34—5 1/2 in.
Length over tube sheets	19 ft.	15 ft.
Grate area	84.3 sq. ft.	91.43 sq. ft.
Heating surfaces:		
Firebox	202 sq. ft.	203 sq. ft.
Combustion chamber	64 sq. ft.	
Arch tubes	23 sq. ft.	37 sq. ft.
Syphons	90 sq. ft.	
Tubes and flues	3,444 sq. ft.	2,354 sq. ft.
Total evaporative	3,823 sq. ft.	2,594 sq. ft.
Superheat, surface	789 sq. ft.	574 sq. ft.
Comb. evaporative and superheat ..	4,612 sq. ft.	3,168 sq. ft.
Tender:		
Style	Water bottom	Water bottom
Water capacity	10,000 gal.	9,000 gal.
Fuel capacity	15 tons	13 tons
Journals, diameter and length ..	6 1/2 in. by 12 in.	6 in. by 11 in.
General data estimated:		
Rated tractive force	46,840 lb.	61,422 lb.
Weight proportions:		
Weight on drivers + total weight engine, per cent.	60.5	100.0
Weight on drivers + tractive force	4.22	4.15
Total weight engine + comb. heating surface	68.4	80.5
Boiler proportions:		
Tractive force X dia. of drivers + comb. heat. surface	794	1091
Tractive force + comb. heating surface	10.14	19.4
Firebox heating surface ÷ grate area	4.5	2.6
Firebox heat. surface, per cent of evap. heat. surface	9.9	9.25
Superheat, surface, per cent of evap. heat. surface	20.6	22.1

* * *



Ewing Galloway

New Cleveland Terminal Nearing Completion

More Savings in Office Supplies

A REDUCTION of \$7,500 a year in the cost of mailing at headquarters, and of \$3,800 in the cost of printing letterheads, copy sheets and envelopes, and a decrease of approximately 10 per cent in the use of stationery, in the face of an increase in business, together with appreciable reductions in the value of such materials carried on hand, are among the results of the activities of a committee which the Chesapeake & Ohio maintains to study the purchase and use of stationery and allied subjects.

This committee was appointed in 1921 and is composed of the assistant to the president as the chairman, a full time secretary and a member each from the transportation, traffic, accounting, and purchasing and claim departments. Its work began with the elimination of obsolete and unnecessary printed forms, the standardization of sizes and grades of forms and of printing methods, and the preparation of a list of the forms and other stationery supplies to be carried in stock, but its duties and authority have also extended to approving all requisitions for new forms, changes in forms and special stationery supplies not carried in stock; also to the establishment of general principles to control the use of special kinds of stationery and office supplies. Recommendations concerning the handling of mail at the general offices, the adoption of standard filing systems and the storage of old records have been included in this work, while its jurisdiction also extends to the adoption of standards for office machines, furniture and equipment, the approving of requisitions to purchase such equipment and the service to other departments of investigating and recommending the use of office appliances calculated to effect economy or increase efficiency.

Deduce Stock Forms to 716

During the first year of the committee's activities, 195 printed forms were abolished, 29 revised, 203 put on cheaper paper and the ruling on 45 changed from machine to type-set ruling or eliminated, resulting in a saving in printing cost of approximately \$15,000 per annum. By January 1, 1927, 545 new forms had been approved, 970 forms revised, 568 abolished and 11 reinstated. About one-third of the revisions consisted of changes in grades of paper and from machine to type-set ruling.

The committee has adopted three standard grades of paper and about 75 per cent of all forms now printed on manilla paper. Approximately 90 per cent of the forms are printed in three sizes, 8 1/2 in. by 5 1/2 in., 8 1/2 in. by 11 in., and 8 1/2 in. by 14 in., the majority being 8 1/2 in. by 11 in. The company now has in use 1,770 forms, of which 716 are stocked in the stationery store and the remaining 1,054 are special forms used by one office only, which are not carried in stock but are charged to expenses at the time of purchase.

Office Machines Pay 60 Per Cent

The committee has approved the purchase of a large number of fanfold waybilling machines, dictating, adding and calculating machines, the use of which produce annual savings of about 60 per cent upon the investment. The committee encourages the use of machines where savings will be obtained or the efficiency increased to such an extent as to justify the cost. The approval of the executive department heads on requisitions for office machines and equipment is evidence of the

advisability of purchasing such equipment, but the committee does not approve their purchase until it determines by investigation that the use of the machines or equipment will produce either increased efficiency in the work with present forces, a reduction in the present force, or the prevention of an increase in the force or the reduction or elimination of overtime.

The committee has compiled valuable data respecting the operation and use of different kinds of office machines and has collected information from outside sources so that it is in position to perform a useful service to other departments in this respect. An accurate card record of each individual machine is maintained, showing the date of purchase, cost description and other details, as well as the cost of repairs made from time to time. Departmental officers are authorized to have office machines repaired locally if the cost does not exceed \$5 on any machine. Where the cost of repairs will exceed \$5, the approval of the committee is required and in such cases the secretary obtains an estimate of the cost and recommends either that the repairs be authorized or that the machine be replaced, taking into consideration the history of the machine, its age, cost of repairs and the extent of use. This plan avoids wasteful repairs to old or obsolete machines and minimizes repair bills. It also enables the secretary to keep a record of the cost of maintaining different makes of similar machines and determine which can be maintained most economically.

The secretary of the committee maintains a complete file of printed forms and is in position to tell upon receipt of a requisition for a new form whether or not a form is already in existence which will answer the purpose. After new forms are approved by the committee, the secretary checks and revises the requisition and the sample copy of the form before it goes to the purchasing department to see that a standard size and proper grade of paper are specified and that the copy is in final form, with a view of eliminating corrections in the printer's proof.

Reduce Stocks

The secretary and the stationery storekeeper make periodical checks of the supplies in individual offices, not only in the general office, but in division offices and large stations with a view of preventing the accumulation of surplus stationery. Small stations are checked by the supply train officers. Approximately \$15,000 worth of stationery and supplies have been returned to the stationery store as a result of these checks. When surplus stock is found, it is in each instance reported to the head of the department, the effect of which is the curtailment of quantities ordered and better care of stationery generally.

The secretary is authorized from time to time to act for the committee within certain well defined limits and report his actions at the next regular meeting. This expedites and reduces the detail work of the committee to such an extent that only one regular monthly meeting is necessary.

The committee has endeavored to perform a service to all departments of the railroad such as to merit their co-operation. The savings have been various, but the principal results have been an effective control of purchases of special items of stationery and supplies, office machines and furniture, and the greater care on the part of using departments in ascertaining their actual needs for articles not carried in stock and in determining the quantities needed of stock items before making requisitions.

Looking Backward

Fifty Years Ago

The New Mexico & Southern Pacific has been incorporated at Santa Fe, N. M., to build that part of the proposed extension of the Atchison, Topeka & Santa Fe which will be constructed from the northern to the southern boundary of New Mexico and occupy portions of the valleys of the Rio Grande, Pecos and Canadian rivers.—*Railroad Gazette*, March 1, 1878.

The receiver's report for 1877 shows that the Atlantic & Great Western (now part of the Erie) has in operation 95 speed recording machines on its freight trains. "Their use has proven of the utmost benefit and saving of expense from accidents. After nearly two years' experience of their use, there has been but one single instance of the derailment of a train on which they are attached," the receiver states.—*Railroad Gazette*, March 1, 1878.

Twenty-Five Years Ago

The Western Pacific was chartered at San Francisco, Cal., on March 3 to construct a railroad from San Francisco to Salt Lake City, Utah, passing through Oakland, Cal., Stockton and Marysville and the Beckwith Pass in the Sierra Nevada Mountains, a distance of about 850 miles.—*Railway Engineering Review*, March 7, 1903.

The employees of the Wabash belonging to the Brotherhood of Railroad Trainmen and the Brotherhood of Locomotive Firemen have been restrained from striking by an injunction that is by far the most drastic ever issued in a case of this kind. The employees threatened to strike as a protest against the refusal of the company to grant their request for an increase of wages.—*Railway Age*, March 6 1903.

One of the snowbound trains on the Newfoundland Railway returned to St. Johns on March 1, 17 days after it left the city, having succeeded in getting only half way across the island. The other express was still fast in the drifts, but the passengers had left it and made their way across 30 miles of snow-covered fields to an open section of line, with a prospect of reaching St. Johns by the middle of this week.—*Railway Age*, March 6, 1903.

With the appointment of a traffic director for all the Gould lines, more than 12 separately officered and operated roads, with a total of more than 15,000 miles of line, will come under one traffic department. There are now two other system traffic directors in the United States—on the Union-Southern Pacific and on the Great Northern-Northern Pacific-Burlington—and the three men supervise traffic on 50,000 miles of road.—*Railway Age*, March 6, 1903.

Ten Years Ago

A statement issued by Herbert Hoover, United States food administrator, on February 21, that the United States is facing a critical period as to its food supply and attributing the cause to railroad congestion has developed a slight controversy with the Railroad Administration. Director-General McAdoo has issued a statement saying that "so far as transportation is concerned there is no danger of suffering from a serious food shortage." At a conference on February 25 between Mr. McAdoo and Mr. Hoover arrangements were made for closer co-operation between the railroad and the food administrations, and C. R. Gray, director of the division of transportation, and C. E. Spens, transportation director of the food administration, were directed to devote special attention to this co-operative work.—*Railway Age*, March 1, 1918.

Communications and Books

Railway Travel Is Safer Than Automobile

TO THE EDITORS

NEW YORK.

There is an inference, it would seem, in the editorial, "Selling the Public on Railway Safety" in the February 18, issue of the *Railway Age* to the effect that the railroads of the country are not giving enough publicity to the safety of travel by passenger trains in their efforts to create more passenger traffic. Personally, I have never lost an opportunity in the numerous speeches I have delivered, particularly before civic bodies and national organizations, to emphasize the safety of travel by railroad and to compare, in this respect, travel by railroad and by automobile.

In this connection your attention is directed to the fact that during 1913 there were 350 passengers killed as compared with 155 in 1926, a reduction of 56 per cent. Of the 155 killed in 1926, only 79 resulted from train accidents, the others being due to accidents which were largely beyond the railroads' control. In 1926 the railroads of the United States carried 860,343,000 passengers, or the equivalent of 35,500,000 passengers a distance of one mile. During that year, as a result of automobile accidents on our streets and highways, there were 23,000 persons killed, of which number 7,600 were passengers in the cars. In other words, in character of accident causes, the latter number compares with the 79 deaths to railroad passengers from train accidents. I have furthered this comparison many times and I have also brought out the greater ease and comfort that have been in keeping with the greater safety of travel by passenger train.

We have a most excellent safety record on our own lines in respect to passengers but it is our thought that the railroads would prefer to handle this particular safety comparison from a national standpoint rather than by individual roads.

CHARLES E. HILL,
General Safety Agent, New York Central Lines

Systematic Draft Gear Inspection

MILWAUKEE, WIS.

TO THE EDITOR:

The proper maintenance of draft gears should be considered as important as to keep the air brake in operative condition. The Chicago, Milwaukee & St. Paul has in the past three years endeavored to work up a practical method of systematic inspection of draft gears. We started out with an elaborate plan but found that it was too expensive and, with the prevailing car department force, the work could not be carried out. We believe that the problem has finally been solved by our present plan of inspecting the draft gears whenever the cars appear on the repair tracks for repairs or to have air brake work done. The American Railway Association requirements are that air brakes be cleaned and tested every 12 months. With our present system we hope to be able to inspect practically all of our equipment once every two years. If all our cars were confined to our own road and not used in interchange we would be able to inspect draft gears once a year, but on account of approximately one-half of the equipment being on foreign lines, we hope to get approximately all cars inspected once every two years.

We find it practicable to inspect gears whenever air brake work is done except at one or two points on the system where we do air brake work at freight houses and it is not convenient to do any draft gear work at those particular points. We started out to drop every draft gear and make a thorough inspection, but we found it too expensive and now if there is no indication that the coupler horn has been in

contact with the striking casting and there is no other sign of defect after an external inspection without removing the draft gear carrier iron, we stencil at the end of the car "draft gear inspected, date and place" just the same as the air brake stencil. The reporting of inspection of draft gears is handled monthly in identically the same manner as the reporting of air brake work. We find that at the present time, of all the draft gears inspected about nine per cent are defective.

It is my firm conviction that the car department cannot spend money in any better way than in a close supervision of the draft gear situation, as a large number of defective and damaged cars are due to defective draft gears.

K. F. NYSTROM,
Superintendent Car Department
Chicago, Milwaukee & St. Paul

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian,
Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

The Lessons of Our Railway Statistics, by Robert Bell. The Assistant General Manager of the London & North Eastern presents facts and trends in the railway world derived from recent statistical reports from various countries in a paper read before the Manchester Statistical Society. Also available in *Journal of the Institute of Transport*, Feb., 1928, p. 211-220. Pub. by John Haywood, Ltd., London, Eng.

Railroad Financing, by Mortimer L. Schiff. A banker of long experience discussed an important subject before the New School for Social Research and this pamphlet contains extracts from the address. 55 p. Pub. by the Author, New York City. Apply.

Suburban Transportation Problems, by George LeBoutillier. The Pennsylvania-Long Island Railroad situation as it affects New York City. 15 p. Pub. by Long Island Railroad, New York City. Apply.

Periodical Articles

Brangwyn Lithographs, by R. G. Praill. Characteristics exemplified by two striking posters done for an English railway. *Commercial Art*, February, 1928, p. 72-73.

High-Pressure Steam in Locomotives, by Prof. Edward C. Schmidt. Recent locomotive designed to obtain greater tractive effort and fuel economy. *Scientific American*, March 1928, p. 210-213.

How Prosperous Are Our Railroads? 1927 results and railroad activity in the early months of 1928 based upon carloadings forecasts. *Literary Digest*, February 25, 1927, p. 68-71.

New British Railroad Era, by Alfred Nutting. "This transport revolution is the outcome of the Railways act of 1921, which, after bringing about the fusion of 120 individual companies into four groups, has now, through the rates tribunal, set up a uniform system of standard charges for passengers and freight." *Commerce Reports*, February 27, 1928, p. 552.

Which Way, America? compiled by Frederick Palmer. Answers by prominent leaders on which way America is leading the world. General W. W. Atterbury on increasing railroad efficiency, p. 599-560. Haley Fiske on the Lackawanna's unemployment insurance proposal, p. 566. *World's Work*, March 1928, p. 556-567.

Odds and Ends of Railroading

Edward B. Mann, air man at the shops of the Louisville & Nashville at South Louisville, Ky., is probably the proudest railroader in the United States. On Wednesday, January 11, at 7:38 p. m., Ed. took his trusty bowling ball in hand and sent it hurling down the alley for 12 straight strikes and a perfect score of 300. Such a score in bowling is like a hole in one in golf, only more so. Ed's feat was performed in a regular league on officially sanctioned alleys and he has been presented with a handsome gold medal by the American Bowling Congress. This is only the second time that a perfect score was bowled on Louisville alleys. Peculiarly enough, the other perfect score was also rolled by an L. & N. man, N. A. Seibert of the auditor of freight accounts' office.

Rule 99 in the Limelight

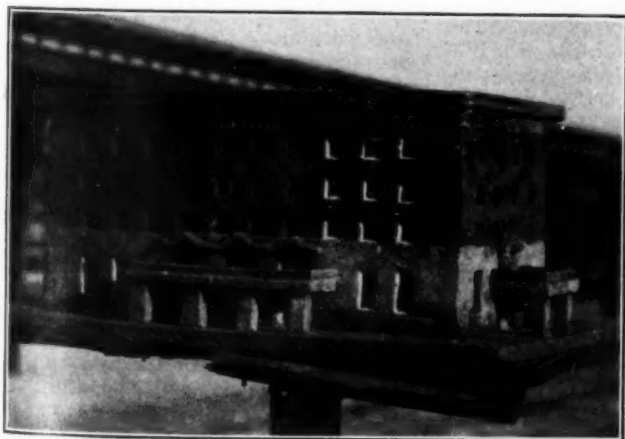
TO THE EDITOR OF ODDS AND ENDS:

To the student of modern railroad efficiency, it is pleasing to see that one of our largest railroads has over 6,000 employees who, in the control of the 6700 trains which the company runs daily, are notable for their "unflagging efforts" to promote the speed, safety and general efficiency of the magnificent trains with which the company strives to please its patrons. This I find in a recent advertisement. As has been many times pointed out, in the columns of your paper, the flagging rule is one of the most troublesome features of railroad operation, and to find that a railroad management has discovered the wisdom of unflagging, is indeed a cheerful bit of news. Possibly America may some day become as enlightened and modern as England and Scotland, where, from time immemorial, the flagging rule has been consistently ignored.—S. G. W.

P. S.—Offer a prize for evidence from any American brakeman, of his having prevented a rear end collision by going back with a flag.

A Union Station for Birds

The union station at Houston is the site of an interesting and unusual bird-house. As may be seen from the photograph, this bird-house is a replica of the union station itself, mounted on what was formerly a lamp post. The model was built



by a Texas farmer who presented it to the station master at Houston. While it was originally intended to be a fish pond, it serves its present purpose admirably.

Bravery, Sans Pantaloon

John Wesley Hutchins of Detroit, Mich., is a determined man. While riding to Atlanta the other day, he awoke to

find his money, watch and clothing gone. Naturally, he protested, as did other passengers who had suffered similar losses. Only Alexander Angus Alexander of Toronto, Ont., did not protest and that was because he couldn't talk, the robbers having made off with his false teeth. Hutchins took charge of the council of war and it was agreed that everyone's baggage must be searched. All went well until Hutchins attempted to search the voluminous baggage of a burly stranger. The burly stranger socked John Wesley Hutchins in the jaw and departed at high speed, accompanied by a confederate. Despite the fact that Hutchins was in his pajamas and bare feet, he gave chase through the terminal station, caught the men and turned them over to the police. It developed that the pair had just been released from the federal penitentiary in Atlanta. The stolen articles were recovered from their baggage.

The Good Old Days *

From a report upon the practicability of providing a check on the cash collections of conductors submitted at meeting of general ticket agents held at Monongahela House, Pittsburgh, Pa., March 14, 1855:

"Your committee is fully aware of the difficulties in the way of securing a proper return of cash collected in the cars, as all efforts hitherto made to accomplish that object have signally failed.

"It must be evident to all who are practically acquainted with the details of railroad business, that any system that will compel passengers to purchase their tickets before entering the cars, must of necessity, effect the object in view. . . .

"Hence, two principal measures have been resorted to by railway companies to this end:

"First: To have public notice given, by large placards, and otherwise, that passengers will be charged five or ten cents extra in the cars, if they do not buy their tickets previously; or, that a reduction of five or ten cents below the tariff rate will be made by the agent at the station to persons purchasing tickets.

"This plan is well enough as far as it goes, but can affect only those points where agents are stationed for the sale of tickets. . . .

"Second: The second method adopted to secure the purchase of tickets at the office, and by far the most effectual, when practicable, is that pursued upon the European roads, and also to some extent in this country, viz.: to fence up the train and admit to the cars only those who can show a ticket, as they pass through the door or gangway leading to the enclosure.

"This plan, though somewhat repugnant to the 'young American' spirit, so widely prevalent in our land, and which cannot brook restraint, is really effectual when it can be put in practice; but the great additional expense of building station-houses in this way, and the fact that but comparatively few of the points on most roads are of sufficient importance to justify the outlay, must insure for this method a very limited application in a country so sparsely populated as our own.

"Besides, at points where the amount of travel is large, the rush made for the doors on the arrival of the cars, coupled with the fact that many of those seeking egress are ladies, and to whom a degree of deference (it may at such a time be mistaken gallantry) is invariably shown by our courteous conductors, must of necessity interfere with the strict enforcement of the rule to 'Show your tickets as you pass out.'

"Many come up to the door before they know they must show their tickets (which are 'in the deep bosom of their pockets' buried) and are squeezed through before they can lay their hands on them; whilst those of the softer sex are generally permitted to pass uninterrupted, especially if they be blessed with a bright eye or rosy mouth—no uncommon occurrence nowadays. . . ."

* Editor's Note—Thank you, Elizabeth Cullen, for sending this in.

NEWS of the WEEK



P. H. C. Hanna Car Ferry Terminal at Key West

THE BALTIMORE & OHIO celebrated its first birthday in the second century of its existence on February 28. The charter under which the company still does business was granted by the State of Maryland on February 28, 1827. Actual construction began on July 4, 1828.

PRESIDENT PATRICK E. CROWLEY of the New York Central Lines at a ceremony in New York on February 28 presented silver cups to the Michigan Central and the Chicago River & Indiana-Chicago Junction as testimonials of their having won an accident-prevention-among-employees contest staged among the various component companies of the New York Central System.

A DELEGATION of railway officers called on President Coolidge at the White House on February 27 to explain their position that the cost of roadway and other physical changes on the railroads that would be required to conform with the plan of the government engineers for the control of the Mississippi river floods should be borne at least in part by the government as a part of the flood control plan. A report of a committee of railway engineers estimating at \$71,835,000 the cost to eleven railroads of the changes that would be required to conform to the plan proposed by General Jadwin, chief of engineers, was presented before the House committee on flood control on January 25 and 26 and was abstracted in the *Railway Age* of February 11. Those who called on the President to outline the situation were Alfred P. Thom, general counsel of the Association of Railway Executives, L. A. Downs, president of the Illinois Central, L. W. Baldwin, president of the Missouri Pacific, A. D. MacDonald, vice-chairman of the Southern Pacific, and R. E. Milling, general attorney of the Louisiana Railway & Navigation Company.

K. C. S. Safety Record

During 1927, the Northern division track department of the Kansas City Southern won the system safety banner with a record of 608,997 man-hours per reportable injury, a truly remarkable performance which it will be hard to duplicate. In commenting on this performance in an editorial entitled, "Persistence Rewarded" on page 435 of the *Railway Age*

of February 25, the zero was dropped, owing to a typographical error. The num- given, 68,997, should have read 608,997 man-hours per reportable injury.

Railway Engineering Association Dinner

More than 800 reservations have already been made for the annual dinner of the American Railway Engineering Association which will be held at the Palmer House, Chicago, on next Wednesday evening, March 7. The speakers will include L. A. Downs, president of the Illinois Central, who will talk on "The Place of the Engineer;" John A. Rowland, attorney, Toronto, Ont., who will speak on "Beyond the Rail Head;" and Herbert Leon Cope, lecturer, whose subject will be "Smiling Through."

300 Million for Fuel in 1927

Class I railways of the United States in 1927 expended \$310,869,524 for coal and oil used as fuel for road locomotives in freight and passenger service, (charged to operating expenses), according to a statistical report made public by the Interstate Commerce Commission. This compared with \$327,465,482 in 1926. In 1927, according to the report, the railways consumed 95,459,840 net tons of coal, at an average cost of \$2.66 a ton, as compared with 101,155,412 tons in 1926 at an average cost of \$2.63 a ton. They also consumed 2,042,137,055 gallons of fuel oil, slightly less than in the year before, at an average cost of 2.81 cents per gallon, as compared with an average of 2.95 cents the year before. The expense for oil was \$57,326,689, as compared with \$60,938,230 in 1926.

Another Train Robbery at Chicago

A Grand Trunk train, carrying \$130,000 in cash for banks at Harvey, Ill., was held up and robbed by six masked men at St. Mary's Cemetery station, 91st Street and Evergreen Park, Chicago, on February 25. The men entered the train and after overpowering the baggage man used dynamite to force their way into the heavily barred mail coach. Five of the bandits were under arrest by the evening

of the following day and part of the loot had been recovered.

This is the second successful attempt made to rob this train, the first being on September 10, 1926 when two bandits entered the car, bound and gagged the two clerks and threw the money off the train at a point where another companion was waiting in an automobile. The money was for the payrolls of three manufacturers in Harvey.

Restriction of Mexican Immigration Opposed

Alfred P. Thom, general counsel of the Association of Railway Executives, appeared at hearings before the committees on immigration of the House and Senate on February 28 and 29 in opposition to bills under consideration for restricting immigration from Mexico into the United States by application of the quota system. Mr. Thom pointed out that in the southwestern part of the United States both the railroads and agriculture had become adjusted to the employment of a large proportion of Mexican labor and that in some sections a large percentage of the labor employed is from that country. To disrupt this condition by shutting off the supply, he said, would have serious results and would tend to create a condition of shortage under which both the railroads and agriculture would be bidding for the available labor supply.

Strictness of the Safety Appliance Law

That the safety appliance law requires a railroad, in its maintenance of car-couplers, air brakes, etc., to adhere constantly to standards of absolute perfection, is well known to those who have had occasion to keep acquainted with the utterances of the courts on the subject. Perfection or nothing! No such thing as Chief Justice White's "rule of reason" ever occurred, to the framers of this statute, as a provision suitable to be included. In a recent decision of the Circuit Court of Appeals, Eighth Circuit, the beauties of this statute are brought out in plain language. The case was one of the government against the Southern Pacific (23 Fed.-2d-61) where a coupler of a freight car failed at or before reaching Duran, N. M. The defect was not discovered by any member of the

train crew until the train reached Pastura, 37 miles north of Duran. There, the trouble was discovered by a brakeman and repairs were made in a minute or two; but the fact that the car had been hauled 37 miles after the fault had developed, made the company liable for violation of law and a penalty of \$100 was imposed. The court holds that the railroad must, at its peril, discover a defect as soon as it occurs. If a trainman then would have been lawful at Duran, it would then have been lawful to move the car to a repair point. The peculiarity of the case is that two government inspectors had discovered the defect at Duran, and apparently this discovery is what brought the case into court. These inspectors did not notify the train crew and, says the court, it was not their duty to do so.

Western Railways Argue Firemen's Wage Appeal in Circuit Court

The United States Circuit Court of Appeals has taken under advisement the appeal of the western railways from the alleged illegal wage increase award to firemen, hostlers and hostlers' helpers, following a hearing at Chicago on February 24. Kenneth F. Burgess, general solicitor of the Chicago, Burlington & Quincy, in arguing the case before the court, declared that the arbitration board lost all further authority to act as a board of arbitration when it made public its report of December 5, stating an inability to reach an agreement. The subsequent report of December 17, made after the deliberations of four arbitrators in the absence of the arbitrators selected by the railroads, has no legal status and can be nothing more than a "pretended" award, Mr. Burgess said.

The court, in discussing the case with Donald R. Richberg, counsel for the Brotherhood of Locomotive Firemen and Enginemen, during his argument, pointed out that the law intends that a decision made by an arbitration board of six men shall represent the deliberations of all six.

When the number of arbitrators is reduced to four the decision loses that element of value, the judges suggested.

Safety Section Circular No. 176

L. G. Bentley, chairman of the committee on education, of the Safety Section, A. R. A., in his monthly circular, presenting recommendations for March, gives special attention to the fact that train service accidents have not been reduced as rapidly as those in other classes. For the first eight months of 1927, fatal and non-fatal injuries to persons in train accidents were reduced 39.3 per cent, and in non-train accidents, 43.6 per cent, has been prescribed by the reduction was only 21.7 per cent. Employees in the train service are warmly praised for their efforts to reduce this record, and the reduction of 28 per cent in trainmen killed and 30 per cent in trainmen injured, is the most gratifying feature of the present record;

it remains true, however, that persons killed and injured at grade crossings and trespassers, walking on railroad property, continue to thwart the efforts of the railroad to reduce the slaughter. These classes, on whom the railroad company can have slight influence, constitute 83 per cent of the 4144 persons killed in train service accidents in the eight months.

Among the classes where the officers and employees of the railroads can make improvement, this circular calls attention to deaths and injuries among employees of the maintenance of way department. As is well known, the numbers in these classes who are struck by locomotives or cars are deplorably large.

Capital Expenditures in 1927

Capital expenditures of the Class I railroads in 1927, for equipment and for additions and betterments to property, amounted to \$771,552,000, according to complete reports for the year compiled by the Bureau of Railway Economics. Compared with the preceding year this was a decrease of \$113,534,000, or 12.8 per cent.

Capital expenditures for equipment in 1927 amounted to \$288,700,000, a decrease of 22.4 per cent compared with 1926. Expenditures for locomotives in 1927 were \$76,975,000, as compared with \$108,263,000 in the preceding year, while for freight train cars \$136,490,000 was expended, as compared with \$185,792,000 in 1926. Capital expenditures for passenger train cars in 1927 totaled \$53,769,000, compared with \$58,117,000 the preceding year.

For roadway and structures, capital expenditures amounted to \$482,852,000, a reduction of \$30,312,000 or 6.3 per cent below 1926, including \$139,175,000 for additional track, as compared with \$166,758,000 the year before. For heavier rail, expenditures totaled \$43,742,000, an increase of \$1,558,000, while for additional ballast, \$16,230,332 was spent in 1927, which was slightly under similar expenditures in the preceding 12 months. For ships and engine houses including machinery and tools, the reports showed capital expenditures amounting to \$35,236,000, compared with \$46,882,000 the year before, while for all

other improvements, \$248,468,000 was expended, an increase of \$7,649,000.

Capital expenditures since 1920 have been as follows:

1920	\$ 653,267,000
1921	557,035,000
1922	429,273,000
1923	1,059,149,000
1924	874,743,000
1925	748,191,000
1926	885,086,000
1927	771,552,000

Total\$5,978,296,000

Kansas City Southern Charged With Violation of Clayton Law

The Interstate Commerce Commission has issued a formal complaint charging "on information and belief" that the Kansas City Southern has violated Section 7 of the Clayton anti-trust act by acquiring and owning and holding "a large part" of the capital stock of the Missouri-Kansas-Texas and the St. Louis Southwestern, with which it states the K. C. S. is in direct competition. The company is notified that a hearing will be held on the charges at Washington on April 2, at which time it may appear and show cause why an order should not be entered requiring it to divest itself of all interest, direct or indirect, in the stock of the two companies "now unlawfully held." It is also directed to file an answer to the complaint within 30 days.

The complaint grows out of charges made during and since the hearings on the application of the Kansas City Southern for authority from the Commission to acquire control of the two roads, by opponents of the plan, that the law had been violated by the acquisition and exercise of virtual control in advance of the application to the commission. In its decision denying the application the commission expressed doubt as to whether the exercise of control was not in violation of the law but the language of the commission was taken as an invi-



Acme Photo

Opening of Moffat Tunnel on February 26

The first official train of the Denver & Salt Lake, opening the line to traffic, is seen emerging from the West portal of the tunnel

tation for a revision of the plan with the Missouri-Kansas-Texas as the controlling company.

The commission's charges state that the Kansas City Southern during the years 1924 to 1927, acquired a large part of the stock of the Missouri-Kansas-Texas and of the St. Louis Southwestern, without the approval or authorization of the the Commission, "and that it later, on or about July 23, 1926, and November 18, 1927, entered into agreements with the M.-K.-T. under which the latter company is to purchase the stock of the St. L. S. W., heretofore acquired by it, and the respondent in the meantime is to retain, and has retained and exercised, certain voting rights attaching to said capital stock of the St. Louis Southwestern Railway Company."

It is charged "that the effect of the acquisition of such capital stock and the use of the same by voting or granting of proxies, or otherwise, may be to substantially lessen competition between respondent, the Kansas City Southern Railway Company, the Missouri-Kansas-Texas Railroad Company and the St. Louis Southwestern Railway Company or to restrain commerce in certain sections and communities."

Meetings and Conventions

The following list gives names of secretaries, date of next or regular meetings and places of meetings.

AIR BRAKE ASSOCIATION.—T. L. Burton, 165 Broadway, New York City. Annual convention, May 1-4, 1928, Book-Cadillac Hotel, Detroit, Mich. Exhibit by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—Charles R. Busch, Buffalo Brake Beam Co., 32 Nassau St., New York. Meets with Air Brake Association.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—J. D. Gowin, 112 W. Adams St., Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 S. Michigan Ave., Chicago. Next meeting, April 17, 1928, Biloxi, Miss.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Annual convention, June 12-15, 1928, Memphis, Tenn.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—L. M. Jones, Supt. of Sleeping and Dining Cars, C. M. & St. P., Chicago. Annual meeting, October, 1928, Havana, Cuba.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—J. W. Welsh, 292 Madison Ave., New York. Annual convention, Sept. 22-28, Cleveland Public Auditorium, Cleveland, Ohio.

AMERICAN RAILROAD MASTER TINNERS' COPPER-SMITHS' AND PIPE FITTERS' ASSOCIATION.—C. Borchardt, 202 North Hamlin Ave., Chicago.

AMERICAN RAILWAY ASSOCIATION.—H. J. Forster, 30 Vesey St., New York, N. Y.

Division I.—Operating—J. C. Caviston, 39 Vesey St., New York.

Freight Station Section (including former activities of American Association of Freight Agents)—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago. Next meeting, June 19-22, Niagara Falls, N. Y.

Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York.

Protective Section (including former activities of the American Railway Chief Special Agents and Chiefs of Police Association)—J. C. Caviston, 30 Vesey St., New York. Next meeting, June 19-21, Hotel Statler, St. Louis.

Safety Section.—J. C. Caviston, 30 Vesey St., New York. Annual meeting, May 15-17, 1928, Hotel Statler, Buffalo, N. Y.

Telegraph and Telephone Section (including former activities of the Association of Railroad Telegraph Superintendents)—W.

A. Fairbanks, 30 Vesey St., New York. Next meeting, Sept. 18-20, 1928, San Francisco.

Division II.—Transportation (including former activities of the Association of Transportation and Car Accounting Officers)—G. W. Covert, 431 South Dearborn St., Chicago. Next meeting, April, 1928.

Division III.—Traffic, J. Gottschalk, 143 Liberty St., New York.

Division IV.—Engineering, E. H. Fritch, 431 South Dearborn St., Chicago, Ill. Annual meeting, March 6-8, 1928, Palmer House, Chicago. Exhibit by National Railway Appliances Association.

Construction and Maintenance Section.—E. H. Fritch.

Electrical Section.—E. H. Fritch.

Signal Section (including former activities of the Railway Signal Association)—H. S. Balliet, 30 Vesey St., New York. Annual meeting, March 5 and 6, 1928, Stevens Hotel, Chicago.

Division V.—Mechanical (including former activities of the Master Car Builders' Association and the American Railway Master Mechanics' Association)—V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Annual convention, June 20-27, 1928, Atlantic City, N. J. Exhibit by Railway Supply Manufacturers' Association.

Equipment Painting Section (including former activities of the Master Car and Locomotive Painters' Association)—V. R. Hawthorne, 431 South Dearborn St., Chicago. Next meeting, Sept. 11-13, Windsor Hotel, Montreal.

Division VI.—Purchase and Stores (including former activities of the Railway Storekeepers' Association)—W. J. Farrell, 30 Vesey St., New York, N. Y. Annual meeting, June 20-22, Atlantic City, N. J.

Division VII.—Freight Claims (including former activities of the Freight Claims Association)—Lewis Pilcher, 431 South Dearborn St., Chicago, Ill. Annual meeting, June 5-8, 1928, Book-Cadillac Hotel, Detroit, Mich.

Car Service Division.—C. A. Burh, 17th and H Sts., N. W., Washington, D. C.

Motor Transport Division.—George M. Campbell, American Railway Association, 30 Vesey St., N. Y. C. Next meeting, June 21-23, Rose Room, Hotel Traymore, Atlantic City, N. J.

AMERICAN RAILROAD BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Chicago. Annual convention, Oct. 23-25, 1928, Statler Hotel, Boston. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—R. G. East, Agricultural Agent, Pennsylvania Railroad, Shelbyville, Ind. Annual convention, May, 1928, Miami, Fla.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railway Association, Division IV). E. H. Fritch, 431 South Dearborn St., Chicago. Annual meeting, March 6-8, 1928, Palmer House, Chicago. Exhibit by National Railway Appliances Association.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C. M. & St. P. Ry., 11402 Calumet Ave., Chicago. Annual convention, August 29-31, 1928, Hotel Sherman, Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.—Secretary: E. H. Lunde, Federal Machinery Sales Co., Chicago.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, 1319-21 F St., N. W., Washington, D. C.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

Railroad Division, Marion B. Richardson, Associate Mechanical Editor, *Railway Age*, 30 Church St., New York. Next meeting, March 14, 29 W. 39th St., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—E. J. Stocking, 111 West Washington St., Chicago.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, District Claim Agent, Northern Pacific Ry., St. Paul, Minn. Next meeting, June, 1928, Omaha, Neb.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 413, C. & N. W. Station, Chicago. Next convention, Oct. 23-26, Hotel Sherman, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Stanley J. Strong, 17th and H Sts., N. W., Washington, D. C.

ASSOCIATION OF RAILWAY SUPPLY MEN.—C. F. Weil, American Brake Shoe & Fdy. Co., 332 So. Michigan Ave., Chicago. Meets with International Railway General Foremen's Association.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—W. D. Waugh, Detroit Graphite Co., St. Louis, Mo. Annual exhibit at convention of American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 129 Charton St., Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2nd Monday in month, except June, July and August, Great Northern Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.—J. W. Krause, 514 East Eighth St., Los Angeles, Calif. Regular meetings, second Friday of each month, 514 East Eighth St., Los Angeles.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—A. J. Walsh, 5874 Plymouth, Apt. 13, St. Louis, Mo. Meetings, first Tuesday of each month, except July and August, Broadview Hotel, East St. Louis, Ill.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 2nd Thursday each month, except June, July, August, Hotel Statler, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—(See Railway Car Department Officers' Association.)

CINCINNATI RAILWAY CLUB.—D. R. Boyd, 811 Union Central Bldg., Cincinnati, Ohio. Meetings, 2nd Tuesday in February, May, September and November.

CLEVELAND RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings, first Monday each month, except July, August, September, Hotel Hollenden, Cleveland.

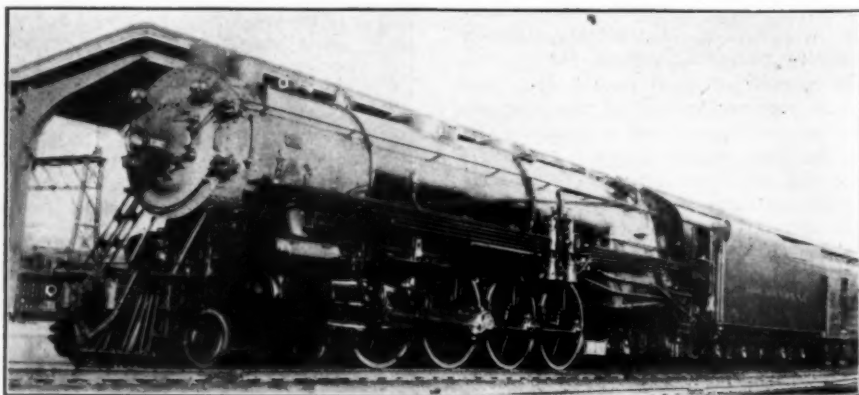
INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Annual convention, August 21-23, 1928, Hotel Sherman, Chicago. Exhibit by International Railroad Master Blacksmiths' Supply Men's Association.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.—W. W. Criley, Ajax Mfg. Co., Cleveland, O.

INTERNATIONAL RAILROAD FUEL ASSOCIATION.—L. G. Plant, 80 E. Jackson Blvd., Chicago. Annual convention, May 7-11, 1928, Chicago. Exhibit by International Railway Supply Men's Association.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn. Annual convention, September 4-7, 1928, Chicago.

INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.—W. J. Dickinson, 180 W. Madison St. Chicago. Meets with International



D. L. & W. 4-8-4 at Hoboken Terminal

Railway Fuel Association.
Annual meeting, March 8, Fairmount Hotel, San Francisco.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 26 Cortlandt St., New York. Annual meeting, May 22-25, 1928, Cleveland.

NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—E. A. Morse, vice-president, Potosi Tie & Lumber Co., St. Louis, Mo. Next annual convention, April 24-26, 1928, Arlington Hotel, Hot Springs, Ark.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—James B. Walker, 270 Madison Ave., New York. Annual convention, September, 1928, Glacier National Park, Mont.

NATIONAL RAILWAY APPLIANCE ASSOCIATION.—C. W. Kelly, 1014 South Michigan Ave., Chicago. Exhibit at A. R. E. A. convention, March 5-8, 1928, Coliseum, Chicago.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section: C. F. Larson, supt. of safety, Missouri Pacific, St. Louis, Mo. Annual congress, Oct. 1, New York.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings 2nd Tuesday in month, excepting June, July, August and September, Copley-Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 3rd Friday in month, except June, July and August.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Annual meeting, March 8, Fairmount Hotel, San Francisco. Regular meetings, 2nd Thursday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 116 Woodward Building, Washington, D. C. Next convention, May 1-4, 1928, Atlanta Biltmore Hotel, Atlanta, Ga.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 1406 Packard Bldg., Philadelphia, Pa. Annual meeting, Hotel Commodore, New York.

RAILWAY CAR DEPARTMENT OFFICERS' ASSOCIATION.—A. S. Sternberg, Belt Ry. of Chicago, Polk and Dearborn Sts., Chicago. Supply Men's Association.—B. S. Johnson, W. H. Miner, Inc., 209 S. LaSalle St., Chicago.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago. Meets with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—F. W. Venton, Crane Co., 836 S. Michigan Ave., Chicago. Meets with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Next convention, Oct. 9-11, 1928.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conwa, 1841 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division and Purchases and Stores Division, American Railway Association. June 20-27.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A., Division I.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahue, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa. Annual convention, September 18-20, 1928, Book-Cadillac Hotel, Detroit, Mich. Exhibit by Track Supply Association.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2nd Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, West Nyack (Rockland Co.), N. Y. Meets with A. R. A., Signal Section.

SOUTHEASTERN CARMEN'S INTERCHANGE ASSOCIATION.—Clyde Kimball, Inman Shops, Atlanta, Ga. Meets semi-annually.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3rd Thursday in January, March, May, July, September and November, Ansley Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & A. Ry., Atlanta, Ga.

TRACK SUPPLY ASSOCIATION.—A. H. Todd, Positive Rail Anchor Co., 80 E. Jackson Blvd., Chicago. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELLING ENGINEERS' ASSOCIATION.—W. O. Thompson, Gen. Supt. R. S., New York Central, Buffalo, N. Y. Annual convention, October, 2-5, 1928, Chicago. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—W. J. Dickinson, 189 West Madison St., Chicago. Regular meetings, 3rd Monday each month, except June, July and August.

Traffic

New Commutation Tickets on the Southern

The Southern Railway announces that hereafter tickets will be on sale at all ticket offices, good up to distances of 200 miles, at reduced rates, as (for example) as follows: Where the one-way fare is one dollar, 10 rides will be sold at 73½ cents each; 20 rides at 57¼ cents each; 30 rides at 52½ cents each. The tickets are for use only in day coaches. The ticket bears the name of the purchaser and is good only for him. A ticket must be used within six months.

L. I. Fare Increase Denied

The Public Service Commission of New York has denied an application of the Long Island Railroad to increase its commutation fares by 20 per cent. A similar denial was made by the New York Transit Commission. The former body has jurisdiction in the state outside New York City and the latter has jurisdiction within the city limits. The denial was based on the "failure of the company to supply sufficiently persuasive proof" of the necessity for the increase. The case has been pending since 1924.

Southwest Shippers' Board

At the Southwest Shippers Advisory Board's seventeenth regular meeting at Shreveport, La., on February 9, there was a distinct note of optimism concerning the business situation.

Reports indicated the following expected increases in carload shipments for the first quarter of the year, compared with the same quarter in 1927: cement 5 per cent; brick 5 per cent; rice 10 per cent; hardware and agricultural implements 10 per cent; lumber, retail, 5 per cent; wholesale, slightly better; fertilizer 50 per cent; grain products 15 per cent; iron and steel 5 per cent; miscellaneous commodities 5 per cent; paper 15 per cent; petroleum and products 5 per cent; sand, gravel and stone 10 per cent; creosoted products 5 per cent.

Decreases are expected in coal and lignite, 2 to 5 per cent; cotton 30 per cent; cotton seed products 20 per cent; and grain and hay 20 per cent.

The report of the agricultural committee showed that in the Southwest the value of agricultural production for 1927 was around \$1,373,000,000, which exceeded by \$86,000,000 the production of 1926. Although cotton production in the Southwest in 1927 was three million bales less than in 1926, the value of the crop exceeded 1926 by \$144,000,000. The farm situation is improved over a year ago in that the amount of rural debt has been greatly reduced and better farm programs established. The acreage planted in winter wheat in Oklahoma is from 10 to 15 per cent greater and in Texas 15 to 20 per cent greater. Of the new railroad construction begun last

year, probably fifty per cent has been completed and the remainder is progressing as fast as conditions will permit. The crop of perishable commodities in southern and southwestern sections promises to equal or exceed the production of last year. Grapefruit production in the Rio Grande valley of Texas will greatly exceed that of last year. The sugar industry of Louisiana and a small part of Texas, which in recent years has suffered tremendous losses as the result of mosaic disease and borer infestation, now promises a speedy come-back through the discovery of new varieties of cane highly resistant to these unfavorable influences.

At the Southeast Shippers meeting E. R. Oliver, vice-president of the Southern, will speak on the "Industrial Renaissance of the South" while W. C. Kendall, manager of the American Railway Association, will present a report of the general transportation situation throughout the United States. Reports showing the trend of production, markets, distribution and stocks on hand, covering every industry will be presented by commodity committees, while the railroads in the Southeast will report on their ability to handle the tonnage.

Railroads Urge Early Regulation of Motor Coach Lines

The Pennsylvania, the Reading, the Delaware, Lackawanna & Western, the Central of New Jersey and several subsidiary companies, in a memorandum filed with the Interstate Commerce Commission in connection with the commission's investigation of motor transport operation, urge that the commission file and transmit to Congress a report recommending "that authority be constituted as promptly as possible to pass upon applications for permission to operate interstate motor busses."

The memorandum points out that the report to the commission by Attorney-Examiner Flynn calls attention to the serious problem arising from the operation of interstate motor coaches between Philadelphia and New Jersey points and between northern New Jersey points and New York. "Confronted with heavy and increasing losses of revenue from the operation of interstate motor busses," it continues, "the carriers on whose behalf this memorandum is filed urgently need relief through the prompt enactment of a federal law providing for the regulation of interstate motor busses. Such law must be the first step in dealing with the problem of co-ordinating rail and motor transportation. The above named railroad companies believe that a law constituting an authority to determine the primary question whether public convenience and necessity require the operation of interstate motor busses on particular routes should be passed with the least possible delay."

Equipment and Supplies

Locomotives

THE NORTHERN PACIFIC 2-8-4 articulator type locomotive ordered from the American Locomotive Company was incorrectly reported in the *Railway Age* of February 11 as having a total weight of 1,802,500 lb., including the tender loaded. This should have been 1,082,500 lb., or 541 tons.

Freight Cars

THE PACIFIC FRUIT EXPRESS has ordered 1,000 refrigerator cars from the Pullman Car & Foundry Company and 1,000 from the Pacific Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of January 21.

THE FRUIT GROWERS EXPRESS is inquiring for 1,200 steel underframes.

THE NORTH AMERICAN CAR COMPANY is inquiring for 300 live poultry cars.

THE ST. LOUIS-SAN FRANCISCO is inquiring for 250 underframes.

THE BOOTH & FLINN COMPANY, Pittsburgh, Pa., has ordered 32 gondola cars from the Bethlehem Steel Company.

THE WESTERN UNION is inquiring for 5 steel underframes and trucks for 50-ft. box cars of 40 tons' capacity.

THE AMERICAN SMELTING & REFINING COMPANY has ordered 60 steel gondola cars of 30 tons' capacity from the Koppel Industrial Car & Equipment Company. These cars are for shipment to Newfoundland. Inquiry for this equipment was reported in the *Railway Age* of February 4.

Passenger Cars

THE CANADIAN NATIONAL has issued an inquiry for 55 passenger cars.

THE NORTHERN PACIFIC is inquiring for 4 gas-electric rail motor cars.

THE RICHMOND, FREDERICKSBURG & POTOMAC is inquiring for 1 cafe parlor car.

THE BOSTON & MAINE is inquiring for 10 combination baggage and mail cars.

THE MISSOURI-KANSAS-TEXAS is inquiring for 8 combination mail and baggage cars.

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC will issue inquiries for 10 baggage cars within the next few days.

Iron and Steel

THE NEW YORK, NEW HAVEN & HARTFORD is inquiring for 150 tons of steel for bridges.

THE PENNSYLVANIA has ordered 150 tons of steel for use at Philadelphia from the McClintic-Marshall Company.

THE CHESAPEAKE & OHIO has ordered 100 tons of steel for bridge construction work at Covington, Ky., from the American Bridge Company.

THE READING COMPANY is inquiring for 100 tons of steel for bridges in Philadelphia, and for 200 tons of steel for bridges on its lines elsewhere.

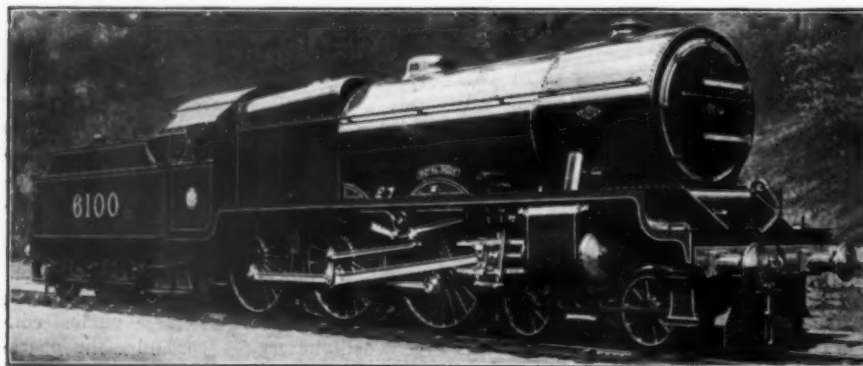
Signaling

THE PERE MARQUETTE has ordered from the General Railway Signal Company 15 locomotive equipments for automatic train control; intermittent inductive type.

THE CANADIAN NATIONAL is to install automatic block signals on its lines, double track, between London, Ont., and Ingersoll, 18 miles, and also between Prescott, Ont., and St. Zotique, Que., 73 miles. Color light signals will be used. The Union Switch & Signal Company supplies the material.

THE CHICAGO, BURLINGTON & QUINCY has ordered from the General Railway Signal Company, two A.T.C. locomotive equipments for locomotives which are to be run over the Chicago & North Western; G. R. S. continuous type.

* * *



The London Midland & Scottish "Royal Scot"

Supply Trade

W. S. Peddie, comptroller of the Minneapolis Steel & Machinery Company, Minneapolis, Minn., has also been appointed treasurer to succeed E. A. Merrill, retired.

E. S. Berry has been appointed resident manager of the Canadian district of the Union Switch & Signal Company, with headquarters in the Transportation Building, Montreal, Que., to succeed Paul Kircher, deceased.

Frank K. Tutt, who entered the service of the Bird-Archer Company as a special representative during the past year, has been promoted to district manager with headquarters in the Railway Exchange, St. Louis.

Hotchkiss Blue & Co., Ltd., Chicago, manufacturers of railway passenger cars, has sold its plant at Harvey, Ill., to Bliss & Laughlin, Inc., manufacturers of cold rolled shafting. The buildings and real estate only are involved in this transaction.

The Sperry Rail Service Corporation, Brooklyn, N. Y., has been organized for the purpose of extending to railroad companies the service of its detector cars, whereby rails in track may be thoroughly tested and the presence of such interior defects as transverse fissures accurately located and recorded. Equipment for recording physical conditions of track will be a feature of this service. Charles W. Gennet, Jr., as announced in *Railway Age* of February 4, has been elected vice-president with headquarters at Chicago and is in charge of all operations.

Albert J. Davis, general superintendent of the Ellington Miller Company, Chicago, since 1921, has been promoted to general manager. Previous to his connection with the Ellington Miller Company, Mr. Davis had been an estimator for the Belledeu Company, Boston, Mass., and construction superintendent for the Wells Brothers Company, New York, and the G. B. Swift Company, Chicago. During the World War he served as an officer in the engineer corps, being awarded the Distinguished Service Medal and the Italian War Cross.

The United Conveyor Corporation, Chicago, has purchased from the Conveyors Corporation of America the good will, and all patterns, patents, designs and manufacturing rights for the American steam jet ash conveyor, the American cast iron storage tank and American air tight doors, and the steam jet ash conveyor business of its predecessors—the American Steam Conveyor Corporation, the Green Engineering Company, the Girtanner-Davies Company, and the Griffin Engineering Company.

Stock Oversubscribed by Pullman Employees

Employees of Pullman, Inc., have oversubscribed the 15,000 share offering of common stock made to them by the directors, at \$75 a share. This is the third offering of stock to employees, the first being made in 1926 when 10,000 shares of old Pullman Co., stock was sold to employees at \$140 a share and a second offering being made last year when a like amount of stock was sold at \$160 a share.

Approximately 10,000 subscriptions were received from employees under the three plans. The present offering was on monthly payments extending over 34 months, with all dividends credited to employees and four per cent interest charged on unpaid balances.

Obituary

Walter Bauer, president of the **Pyrene Manufacturing Company**, Newark, N. J., died on February 12.

Thomas B. Kirby, organizer and president of the Kirby Equipment Company from 1900 until his retirement in 1916, died on February 18, at Culver City, Cal. He entered railroad service with the Lake Shore & Michigan Southern (now a part of the New York Central) in the shops at Adrian, Mich., about 1870. Later he was transferred to Chicago where he was division master car builder for several years. He resigned from this position to become superintendent of the car department of Armour & Company and later entered the employ of the Lappin Brake Shoe Company. He resigned from the latter company about 1900 to organize the Kirby Equipment Company, of which he was president until he retired from business and moved to California in 1916.

* * *



A First Class Pullman Dining Car on the St. Gothard Line, Switzerland

Construction

BEAVER, MEADE & ENGLEWOOD.—This company plans, contingent upon approval of the Interstate Commerce Commission, the construction of an extension from Hooker, Okla., to Des Moines, N. M. Location surveys and estimates have been completed for the construction of the first section of the proposed extension from Hooker to the New Mexico state line, 97 miles. The cost of this section is estimated at \$20,240 per mile.

CANADIAN PACIFIC.—Plans have been announced by this company for new construction on the Western lines in Manitoba, Saskatchewan, Alberta and British Columbia in 1928. Coaling stations will be constructed at Elkhorn, Man., Hardisty, Alta., and Vulcan, Wilkie, Sask., and Goudie, Crows Nest, B. C., Nelson and Tadance. It is planned to rebuild the enginehouse at Nelson, B. C., and construct a new power house at Brandon, Man. The capacity of the freight car shops at Weston, near Winnipeg, Man., will be doubled by the construction of a concrete, brick and steel addition, having outside dimensions of 305 ft. by 315 ft., and the locomotive shops at the same point will also be enlarged. Combined freight and passenger stations will be constructed at McMahon, Sask., Armley, Sylvania, Lac Vert, Neilburg, Crane Valley, Tuberosa, Rockglen, Coronach, Fox Valley and Carmichael, Queens-town, Alta., and Hobbema. Grade revisions will be undertaken on the main line between Brandon, Man., and Sidney.

LINN COUNTY LOGGING & LUMBER.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of a line from a point between Albany and Conser, Ore., on the line of the Oregon Electric, to a point near Cascadia, Ore., 40 miles, with three branches aggregating 28 miles.

PENNSYLVANIA.—A contract has been let to D. S. Warfel of Lancaster, Pa., for the rearrangement of the cattle pens and tracks at Lancaster at a cost of \$40,000.

PITTSBURGH, LISBON & WESTERN.—This railroad, control of which has been sought by the Montour Railroad, a Pennsylvania corporation, has applied to the Interstate Commerce Commission for authority to construct 27 miles of line from Milrock into Youngstown, Ohio, with a four-mile branch to Struthers, near Youngstown. It has also applied for permission to build an additional 13 miles from Negley, Ohio, to Smiths Ferry, a point on the Ohio river in Pennsylvania. The application explained that the new line would enable producers in Youngstown to take advantage of a rail and water haul to points in the Ohio-Mississippi rivers section.

ST. LOUIS, BROWNSVILLE & MEXICO.—

This company has applied to the Interstate Commerce Commission for authority to build an extension of about 25 miles from a point near Brazoria, Tex., to a point on the line between Fort Bend and Wharton counties, Tex.

Pennsylvania Plans Four Track Line in Baltimore

The Pennsylvania has laid before the city authorities at Baltimore, Md., a tentative preliminary plan for the improvement of its main line (New York to Washington) through the city, by the construction of two additional tracks and including proposals for the eventual electrification of this part of the line, most of it being underground. The proposed improvements include the construction of third and fourth tracks as far as Loudon park cemetery, west of the city, and the elimination of a number of highway grade crossings. Additions to the facilities of the passenger station are also included.

From the Union Station westward, the present line runs through a long tunnel on an ascending grade and from the Union Station eastward, there is a similar tunnel, not so long.

To provide separate tracks for freight trains, a new tunnel north of the present one is planned to be constructed west from the station to Fulton Junction and a new one south of the present line, east on the station, (Greenmount avenue to Bond street). With the completion of the new tunnels, the passenger trains would use the northernmost lines (new west of the station and old east of the station) and the freight trains the southernmost (old, west of the station and new, east of the station). Plans announced some years ago for enlargement of the freight terminal at Calvert street have been abandoned because of changes in city freight traffic movement due to the extensive introduction of trucks, and new plans are being prepared.

The first step in the improvement is the obtaining of a franchise from the mayor and city council, preliminary to which there will be conferences with the engineering department of the city.

The estimated cost of the improvements thus far planned would be \$15,000,000, including the Calvert street terminal, but excluding the cost of electrification.

A BILL to provide for a plan of co-operation between the Interstate Commerce Commission and the Board of Railway Commissioners for Canada, in respect of rates, charges and practices affecting transportation between points in the United States and points in Canada, by amendment of section 13 of the interstate commerce act, was introduced in Congress on February 20 by Representative McLeod, of Michigan, as H. R. 11,201.

Financial

AKRON, CANTON & YOUNGSTOWN.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue \$950,000 of general and refunding mortgage bonds and to sell \$500,000 of them at 98 and interest.

ALBERTA & GREAT WATERWAYS.—*Refuse Offer for Operation.*—Premier P. E. Brownlee of the Province of Alberta and president of the railway has refused the offer of the Canadian National to take over the operation and maintenance of this railway. The Canadian National offered to pay interest charges of 4½ per cent on \$1,000,000 beginning July 1, 1930, increasing the principal upon which interest would be guaranteed each two years until a maximum of \$5,000,000 has been reached in 1938. After that date interest charges would be paid upon the total amount of \$5,000,000.

BALTIMORE & OHIO.—1927 *Earnings.*—The statement of earnings for 1927 shows net income after interest and other charges of \$22,632,345, equivalent after allowance for the 4 per cent dividend on the preferred stock, to \$9.42 per share on the outstanding common stock. The net income in 1926 was \$28,494,294, or \$17.20 per share. See synopsis of annual report on adjoining pages.

CHESAPEAKE & OHIO.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire and operate over the so-called Chesapeake & Ohio viaduct and other property of the Louisville & Jeffersonville Bridge & Railroad Company at Louisville, pursuant to an agreement by which the Cleveland, Cincinnati, Chicago & St. Louis will acquire 4,750 shares of the stock of the bridge company so as to give it complete stock ownership and assume the C. & O.'s liability for bonds issued by the Bridge company. The C. & O. will then acquire the viaduct and incidental property for \$300,000 in cash.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—*Bonds Authorized.*—The Interstate Commerce Commission has authorized an issue of \$1,100,000 debenture gold bonds of 1930 to reimburse the company's treasury for capital expenditures previously made, and to provide cash. The bonds are to be sold at the best price obtainable, but at not less than 99.

CHICAGO & EASTERN ILLINOIS.—1927 *Earnings.*—A preliminary statement of earnings for 1927 shows net income after interest and other charges of \$438,409, equivalent to \$1.99 per share on the outstanding preferred stock. The net income in 1926 was \$644,355 or \$2.92 per share on the preferred stock. Selected items from the income statement follow:

CHICAGO & EASTERN ILLINOIS		
	1927	1926
Average mileage operated	945.13	945.13
RAILWAY OPERATING REVENUES	\$26,714,327	\$28,251,751
Maintenance of way	3,192,223	3,044,951
Maintenance of equipm't	5,972,979	7,241,196
Transportation	10,430,582	10,349,070
TOTAL OPERATING EXPENSES	21,529,900	22,605,951
Operating ratio	80.59	80.02
NET REVENUE FROM OPERATIONS	5,184,426	5,645,800
Railway tax accruals	1,400,000	1,642,000
Railway operating income	3,776,664	3,993,866
Equipment rents, net dr.	963,688	834,080
Jt. facility rents, net dr.	521,267	551,244
NET RAILWAY OPERATING INCOME	2,291,709	2,608,542
Non-operating income	502,380	422,243
GROSS INCOME	2,794,088	3,030,785
Rent for leased roads	153,604	154,750
Interest on funded debt	2,148,500	12,637
TOTAL DEDUCTIONS FROM GROSS INCOME	2,355,679	2,386,430
NET INCOME	438,409	644,355

CINCINNATI, NEW ORLEANS & TEXAS PACIFIC.—*Extension of Lease of Cincinnati Southern Approved by Examiner.*—Examiner Haskell C. Davis of the Interstate Commerce Commission has submitted to the commission a proposed report recommending that it approve and authorize the proposed modification and extension of this company's lease of the Cincinnati Southern, which is owned by the city of Cincinnati. It is proposed to extend the lease for 99 years from January 1, 1928, in consideration of the double-tracking of the line between Williamstown and Danville, Ky., 77 miles, by the lessee, at an estimated cost of \$13,200,000. The agreement provides for an increased rental, including a fixed rental beginning at \$1,250,000 annually and increasing to \$1,700,000, and a portion of the net profits ranging from 2 to 6 per cent, sinking fund payments, taxes, etc.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—*To Acquire Stock of Bridge Company.*—This company has applied to the Interstate Commerce Commission for authority to acquire 4,750 shares of the stock of the Louisville & Jeffersonville Bridge & Railroad Company, from the Chesapeake & Ohio, and to assume the liability of the C. & O. in respect of the bonds of the bridge company, in consideration of a transfer of a portion of the terminal property to the C. & O.

DELAWARE, LACKAWANNA & WESTERN.—*New Director.*—David F. Houston, president of the Mutual Life Insurance Company, has been elected a member of the board of managers.

EDMONTON, DUNVEGAN & BRITISH COLUMBIA.—*Purchase Offer Refused.*—The Province of Alberta, owner of this company, has refused through Premier J. E. Brownlee, president, the joint offer of the Canadian National and the Canadian Pacific for its purchase at a price of \$17,420,000. The offer provided for the assumption by the two railroads of the bonded liabilities of the E., D. & B. C. amounting to \$9,420,000 and payment of \$8,000,000 to the province over a period of 10 years, the province to carry all the interest on this amount until July

1931, when interest at 4 per cent would be paid on \$1,000,000 and each year thereafter on an additional \$1,000,000 until the entire \$8,000,000 is paid.

Alberta Railways Valuation.—A physical valuation of the five railways owned by the Province of Alberta—the Edmonton, Dunvegan & British Columbia, the Central Canada, the Pembina Valley, the Alberta & Great Waterways and the Lacombe & North-Western—completed by John D. Callaghan, deputy minister of railways, and made public by Vernor Smith, minister of railways, in his annual report to the legislature shows their actual worth to be \$30,822,906.07. The valuation is divided as follows: E., D. & B. C., \$14,574,970; Central Canada, \$3,721,768; Pembina Valley, \$824,968; A. & G. W., \$9,578,239; L. & N. W., \$2,122,961. The report shows that in 1927 these railways incurred net corporate losses of \$1,901,920, distributed as follows: E., D. & B. C., \$760,011; Central Canada, \$288,719; Pembina Valley, \$648; A. & G. W., \$718,548; L. & N. W., \$133,993.

GREEN BAY & WESTERN.—1927 *Earnings.*—A preliminary statement of earnings for 1927 shows net income after interest and other charges of \$301,362, equivalent after allowance for 5 per cent on the debenture A bonds to 2 per cent on the outstanding debenture B bonds. The net income in 1926 was \$317,795, or 2.2 per cent. Selected items from the income statement follow:

GREEN BAY & WESTERN		
	1927	1926
RAILWAY OPERATING REVENUES	\$1,579,393	\$1,645,802
Maintenance of way	307,523	320,857
Maintenance of equipm't	248,249	277,934
Transportation	582,611	582,814
TOTAL OPERATING EXPENSES	1,266,558	1,271,312
NET REVENUE FROM OPERATIONS	352,835	374,490
MISCELLANEOUS EARNINGS, RENTALS, ETC.	91,089	100,129
GROSS INCOME	443,924	474,618
Less tax, rents, etc.	142,562	156,823
NET INCOME	301,362	317,795

HOUSTON & BRAZOS VALLEY.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority for the authentication of \$1,823,000 of its first mortgage 5 per cent bonds, to be delivered to the New Orleans, Texas & Mexico on account of indebtedness for advances.

INDIANA HARBOR BELT.—1927 *Earnings.*—A preliminary statement of earnings for 1927 shows net income after interest and other charges of \$1,356,213, as compared with net income in 1926 of \$1,449,012.

LEHIGH VALLEY.—1927 *Earnings.*—A preliminary statement of earnings for 1927 shows net income after interest and other charges of \$4,266,007, equivalent after allowance for the 10 per cent dividends on the preferred stock, to \$3.51 per share on the outstanding common stock. The net income in 1926 was \$10,021,113.

(Continued on page 557)

Annual Reports

Synopsis of Annual Report, The Baltimore & Ohio Railroad Company, Calendar Year 1927

OFFICE OF THE PRESIDENT
BALTIMORE, Md., February 29, 1928.

To the Stockholders of
The Baltimore and Ohio Railroad Company:

That you may be promptly informed of the results obtained from the operation of your property for the year ended December 31, 1927, the President and Directors submit herewith a condensed income statement, compared with the preceding 12 months period, together with balance sheet, as of December 31, 1927, and certain general information which it is thought will be of interest to you.

The Annual Report of your Company in the customary form will be prepared and forwarded later to those stockholders who may advise the Secretary of the Company of their desire to receive a copy.

The total miles of first main track operated in 1927 was 5,637.54, a net increase of 349.57 miles, compared with the year 1926. This increase in mileage was due principally to including for the year of 1927 the mileage of the Cincinnati, Indianapolis and Western Railroad Company, 317.98 miles, which was acquired in 1926. During 1927 your Company also operated directly the properties of the Indian Creek Valley Railway Company, 24.07 miles; the Cheat Haven and Bruceton Railroad Company, 6.38 miles, and the Hamilton Belt Railway Company, 2.94 miles. In order to afford a more accurate comparison, therefore, the figures for the year 1926 have been restated herein to include the operations of these several properties.

The net income for the year available for dividends and other corporate purposes, after the payment of interest, rentals, taxes and other fixed charges, was \$22,632,345. While this was a decrease of \$4,977,414, compared with 1926, it was still the largest income in the history of your Company with the single exception of that year.

After paying the 4% dividend upon the Preferred Stock there remained \$20,277,817 equal to \$11.10 per share on the average amount of common stock outstanding during the year. Dividends at the rate of 6% were declared on the common stock outstanding during the year, after which there remained from the year's operations to be carried to profit and loss \$9,313,326. The total accumulated surplus of your Company on December 31, 1927, was \$90,935,666.

During the year your Company increased its capital through the issue and sale, as of June 9, 1927, of \$63,242,500 additional common stock at the price of \$107.50 per share. From the proceeds of this sale your Company was enabled to retire on or before January 1, 1928, obligations in the amount of \$35,800,000, the balance of the proceeds being available for additions and betterments to the property. By virtue of this sale of additional shares the fixed charges of your Company will be reduced by \$2,144,000 per annum. There was also effected an improvement in the relationship of capital stock and mortgage debt to total capitalization, namely, from 26.65% of stock and 73.35% of mortgage debt to 33.48% of stock and 66.52% of mortgage debt. In other words, instead of a proportion of one of stock to three of bonds, the relationship became one of stock to two of bonds; an improvement which should be reflected in a broader market for your Company's securities, and cheaper financing of your Company's monetary requirements in the future.

During the year there was expended for additions and betterments to road \$13,386,864 and for additional equipment \$16,552,883; total, \$29,939,747. The additional equipment consisted of twenty especially heavy passenger locomotives, known as the "President Series," and two electric locomotives, all of which equipment has been designed for and used in the operation of the passenger service between Washington and New York.

The following passenger and freight car equipment also was purchased: 115 new all-steel passenger train cars, consisting of coaches, diners, baggage and combination cars; 1,625 all-steel box cars, and 3,000 all-steel hopper cars. In order to effect the more economical operation of local passenger service, five additional gas and electric cars were secured.

Five passenger train cars, 2,039 freight train cars, and 360 pieces of work equipment, no longer suitable for modern service and efficient operation, were retired during the year.

The motor coach service from train-side at Jersey City into the Metropolitan area of New York is meeting with approval on the part of the traveling public, as reflected in the steadily increasing patronage of this service.

In addition to the special passenger train service being rendered by the "Capitol Limited," "National Limited" and "Detroit-Washington Limited," there was added during the year the "Fort Pitt Limited," a new train operating between Pittsburgh and Chicago.

Notwithstanding the fact that there occurred a general decrease in business throughout the country, emphasized in the territory served by your Company because of the marked decline in the export coal traffic due to the settlement of the British coal strike, the tons of revenue freight carried decreased but 5.01%, compared with 1926; while due to the increase in the average miles each ton was moved, the tons one mile decreased only 2.39%. Freight revenue as a whole decreased 4.20%, due in part to the decrease in tons one mile, and in part to slightly lower rates per ton per mile which were effective during the year.

The number of passengers carried during the year decreased 6.28 per cent., compared with 1926, and the passenger revenue decreased 6.58 per cent.

From each dollar of earnings received during the year your Company expended 33.40 cents for maintenance as compared with 34.04 cents in 1926. Transportation expenses consumed 35.47 cents of each dollar earned in 1927, compared with 34.77 cents in 1926, the increase being mainly due to higher rates of pay granted employees. The increases in rates of pay, largely the result of arbitration awards, are in part reflected in the somewhat higher operating expense ratio, which was 75.65 per cent. of the operating revenues in 1927, compared with 74.34 per cent. in 1926.

The increase in general expenses is in large part due to the unusual expense incident to the Centenary Celebration, and in part to the increased basis of pension payments to retired employees, and the inclusion of the entire administrative expenses of the Relief and Savings Features, which are assumed by your Company under resolution of the Board of Directors, effective October 1, 1926.

The property has been well maintained and was in good physical condition at the end of the year.

February 28, 1927, marked the completion of the Company's one-hundredth year of continuous existence under its original charter. The event was fittingly celebrated by a Centenary Exhibition and Pageant on the Company's property at Halethorpe, in the suburbs of Baltimore, from September 24 to October 16, 1927. "The Fair of the Iron Horse," as it came to be known, seemed to meet with public favor and approval. In the twenty-three days of its existence more than 1,250,000 persons visited the grounds and inspected the many interesting exhibits depicting the advance of American railroad development throughout the first century of its existence. On a specially constructed loop of railroad track and highway side by side a Pageant moved daily which showed the story of the development of inland transport in the United States. There was presented a line of locomotives which illustrated, step by step, the development of the steam locomotive on the Baltimore and Ohio, and through the courtesy of other companies there were also presented engines of both early and modern design from prominent railroads in the United States and Canada, with a particularly interesting type from the Great Western Railway of England. Much favorable comment as to the historical accuracy and educational value of the Pageant was expressed throughout the country.

The Management again desires to commend the Baltimore and Ohio service to the shareholders, and through them to the general public, and to ask their further cooperation in its efforts to secure a greater proportion of the business moving to and from the territory which it serves. The assistance given by the shareholders in the past has been most helpful, and it is hoped this cooperation will be continued and extended where opportunity may offer.

DANIEL WILLARD, President.

[ADVERTISEMENT]

THE BALTIMORE AND OHIO RAILROAD COMPANY

Income Account

	1927	1926	Increase or Decrease	
			Amount	%
Revenue from freight transportation.....	\$203,567,887	\$212,491,018	\$ *8,923,131	*4.20
Revenue from passenger transportation.....	26,286,707	28,137,228	*1,850,521	*6.58
Revenue from mail, express and other transportation service.....	16,223,916	16,945,140	*721,224	*4.26
Total Railway Operating Revenues.....	\$246,078,510	\$257,573,386	\$ *11,494,876	*4.46
Maintenance of Way and Structures.....	\$30,894,282	\$32,639,547	\$ *1,745,265	*5.35
Maintenance of Equipment	51,318,648	55,039,906	*3,721,258	*6.76
Traffic	5,599,463	5,241,032	358,431	6.84
Transportation	87,289,456	89,545,840	*2,256,384	*2.52
General	8,851,319	6,793,829	2,057,490	30.28
Miscellaneous	2,215,353	2,212,147	3,206	0.14
Total Railway Operating Expenses.....	\$186,168,521	\$191,472,301	\$ *5,303,780	*2.77
Transportation Ratio	35.47%	34.77%		
Total Operating Ratio.....	75.65%	74.34%		
Net Revenue from Railway Operations.....	\$59,909,989	\$66,101,085	\$ *6,191,096	*9.37
Taxes	\$12,286,617	\$12,076,677	\$209,940	1.74
Equipment, Joint Facility Rents, etc.....	2,806,145	3,860,558	*1,054,413	*27.31
Total Charges to Net Revenue.....	\$15,092,762	\$15,937,235	\$ *844,473	*5.30
Net Railway Operating Income, as defined in the Transportation Act of 1920	\$44,817,227	\$50,163,850	\$ *5,346,623	*10.66
Other Income—Rents, Dividends on Stock and Interest on Bonds owned..	8,570,687	7,116,338	1,454,349	20.44
Total Income from all sources.....	\$53,387,914	\$57,280,188	\$ *3,892,274	*6.80
Deductions for Interest and Rentals.....	\$30,091,076	\$28,930,108	\$1,160,968	4.01
All Other Charges against Income.....	664,493	740,321	*75,828	*10.24
Total Deductions from Income.....	\$30,755,569	\$29,670,429	\$1,085,140	3.66
Balance of Income available for dividends and other Corporate purposes....	\$22,632,345	\$27,609,759	\$ *4,977,414	*18.03
Dividends declared:				
Preferred Stock—4%.....	\$2,354,528	\$2,354,528		
Common Stock—6%.....	10,964,491	9,116,725	\$1,847,766	20.27
Total Dividends	\$13,319,019	\$11,471,253	\$1,847,766	16.11
Leaving a Surplus, after all charges and dividends declared, of.....	\$9,313,326	\$16,138,506	\$ *6,825,180	*42.29
Statistics				
Revenue Passengers Carried.....	12,873,274	13,736,339	*863,065	*6.28
Revenue Passenger Miles.....	844,449,038	902,306,942	*57,857,904	*6.41
Average Miles per Passenger.....	65.60	65.69	*0.09	*0.14
Average Rate per Passenger Mile (cents).....	3.113	3.118	*0.005	*0.16
Tons of Revenue Freight Handled.....	108,495,849	114,222,970	*5,727,121	*5.01
Revenue Ton Miles.....	20,841,869,236	21,351,919,732	*510,050,496	2.39
Average Miles per Ton.....	192.10	186.93	5.17	2.77
Average Rate per Ton Mile (mills).....	9.77	9.95	*0.18	*1.81
Revenue Tons per Train Mile.....	856.67	850.03	6.64	0.78
Freight Train Miles per Train Hour.....	10.67	10.23	0.44	4.30

* Decrease.

THE BALTIMORE AND OHIO RAILROAD COMPANY

Condensed Balance Sheet—December 31, 1927

ASSETS		
Investment in Property used in Transportation Service.....		\$859,885,306
Road		\$608,337,240
Equipment		251,548,066
Investment in Separately Operated Companies, including Miscellaneous Physical Property		58,174,738
Investment in Sinking Funds and Deposits account Property Sold.....		667,703
Investment in Other Companies.....		56,741,577
Total Investments		\$975,469,324
Current Assets		91,913,650
Cash		\$18,749,860
Cash Reserve for Redemption of Bonds, January 1, 1928.....		34,717,775
Other		38,446,015
Deferred Assets		4,201,266
Total Assets		\$1,071,584,240
LIABILITIES		
Capital Stock Outstanding.....		\$274,051,035
Preferred		\$58,863,181
Common		215,187,854
Premium on Capital Stock.....		3,320,231
Long Term Debt.....		553,379,173
Mortgage Debt		\$476,454,423
Equipment Obligations		70,488,800
Capitalized Leaseholds		6,435,950
Current Liabilities—Traffic and Car Service Balances, Accounts and Wages Payable, Interest and Dividends Matured and Unpaid, Unmatured Dividends Declared, and Other Current Liabilities.....		29,570,123
Bonds Called for Redemption, Payable January 1, 1928.....		33,871,000
Liability for Provident Funds and Other Deferred Items.....		10,424,802
Accrued Depreciation—Equipment		61,772,898
Reserve for Taxes, Insurance, Operation, etc.....		14,259,312
Surplus		90,935,666
Total Liabilities		\$1,071,584,240

Road Operated and Equipment

Total Miles of Road Operated.....	5,638
Total Miles of All Track Operated.....	11,037
Locomotives	2,554
Passenger Train Cars.....	1,704
Freight Train Cars.....	105,940
Tugs, Barges and Other Boats.....	179
Work Equipment	2,995

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Synopsis of Annual Report, Reading Company, Calendar Year 1927

PHILADELPHIA, PA., February 23, 1928.

To the Stockholders of the Reading Company:

The Board of Directors submits herewith its 30th Annual Report.

The income for the year ended December 31, 1927, was as follows:

	1927
Railway Operating Revenues.....	\$92,590,435.83
Railway Operating Expenses.....	71,880,069.33
Net Revenue from Railway Operations.....	\$20,710,366.50
Railway Tax Accruals.....	\$5,184,746.64
Uncollectible Railway Revenues.....	9,683.13
Total Taxes and Uncollectible Railway Revenues.....	\$5,194,429.77
Total Railway Operating Income.....	\$15,515,936.73
Nonoperating Income.....	1,274,183.99
Net Railway Operating Income.....	\$16,790,120.72
Other Nonoperating Income.....	5,095,461.23
Gross Income.....	\$21,885,581.95
Deductions from Gross Income.....	8,388,922.14
Net Income.....	\$13,496,659.81
Income Appropriated for Sinking Fund and Reserve Funds.....	\$47,489.11
Income Appropriated for Investment in Physical Property.....	3,620,000.00
Total Appropriations of Income.....	\$3,667,489.11
Income Balance Transferred to Profit and Loss.....	\$9,829,170.70

Equipment

All of the equipment mentioned in the 1926 report as having been contracted for by Reading Company was delivered to the Company and placed in service during the year 1927.

During the year 1927 contracts were awarded for the construction or purchase of the following additional equipment, which was delivered to the Company during the year:

- 1000 Gondola Cars
- 5 Air Dump Cars
- 2 Ballast Cleaners
- 15 Steel Baggage Cars

and for the following equipment to be delivered during 1928:

- 1 Diesel Tug for Harbor Service
- 2 Stock Cars
- 10 Steel Baggage and Mail Cars
- 1 Oil-Electric Locomotive
- 5 Well Cars
- 2 Railway Motor Cars
- 23 Motor Cars for Section and Signal forces.

Important improvements to existing equipment were authorized during the year as follows:

- Installation of train control equipment on 16 locomotives.
- Increasing capacity of 2,722 box cars from 60,000 pounds to 80,000 pounds by replacement of trucks.
- Installation of exhaust injectors on 20 locomotives.
- Installation of thermic syphons on 25 locomotives.
- Conversion of 10 Mallet type locomotives into Santa Fe type and installation thereon of thermic syphons.

Equipment Trust Obligations

At the close of the fiscal year ended December 31, 1927, there were outstanding Equipment Trust obligations to the extent of \$18,155,000. These obligations were as follows:

Series	Outstanding Dec. 31, 1926	Payments During Year	Outstanding Dec. 31, 1927
G.....	\$450,000	\$450,000	\$
H.....	760,000	190,000	570,000
I.....	3,600,000	600,000	3,000,000
J.....	4,990,000	830,000	4,160,000
K.....	5,600,000	800,000	4,800,000
L.....	6,375,000	750,000	5,625,000
	\$21,775,000	\$3,620,000	\$18,155,000

Of the \$18,155,000 Equipment Trust Certificates outstanding December 31, 1927, \$12,330,000 were owned by Reading Company, and \$1,638,000 by subsidiary companies.

Port Richmond Grain Elevator

The new modern concrete export grain elevator being erected at Port Richmond, Philadelphia, by the Philadelphia Grain Elevator Company, was practically completed at the end of the year, and arrangement had been made for its formal opening on January 14, 1928. Approximately 1,000,000 bushels of grain were stored in the elevator on December 31st. It is planned to dismantle the old elevator as soon as the grain stored therein shall have been removed.

The Philadelphia Grain Elevator Company issued during the year 1927 \$2,000,000 of the 5% bonds authorized under its mortgage dated January 2, 1926. These bonds, which had been guaranteed by Reading Company under authority of the Interstate Commerce Commission, Finance Docket No. 5925,

were acquired by Reading Company and placed in its Treasury.

Federal Valuation of Railroads

The physical valuation of Reading Company's property was continued during the year at a cost to the Company of \$115,294.59.

The conference which was begun in 1926, between representatives of Reading Company and of the Interstate Commerce Commission, relative to this Company's protests against the Commission's Tentative Valuations as of June 30, 1917, was concluded during the year.

On September 12th a hearing was begun before the Examiners for the Commission and continued until October 24th. Testimony was presented by both the Company and the Bureau of Valuation of the Commission with respect to protested matters for which no stipulations had previously been made. Reading Company's brief was filed with the Commission on January 14, 1928.

The Wilmington and Northern Railroad Company

The Wilmington and Northern Railroad Company's issue of \$353,500 First Mortgage 5% bonds dated December 1, 1887, matured December 1, 1927. The Interstate Commerce Commission under Finance Docket No. 6483 authorized the Railroad Company to extend the issue for a period of fifty years from December 1, 1927, with interest reduced to 4½% per annum. Both principal and interest are guaranteed by Reading Company by endorsement.

Warrants and Certificates of Interest

The balance of 6,130 Warrants, which had been issued by Reading Company in January, 1924, referred to in the report for 1926, were duly exchanged for Certificates of Interest, thereby completing that phase of the Segregation Plan.

By Order entered May 3, 1927, the District Court of the United States for the Eastern District of Pennsylvania extended to January 1, 1928, the time for the exchange of the Certificates of Interest into definitive shares of the Philadelphia and Reading Coal and Iron Corporation.

On December 2, 1927, the District Court entered a further Order:

- 1.—Approving the proposed transfer by The Baltimore & Ohio Railroad Company and the Estate of P. A. B. Widener of the Certificates of Interest held by them, respectively, to the National City Bank of New York, as Trustee, for the purpose of exchange into definitive shares of the Philadelphia and Reading Coal and Iron Corporation and the subsequent sale of such shares in accordance with the terms of a proposed trust agreement duly submitted to the Court.
- 2.—Directing the extension to April 1, 1928, of the time within which disposition may be made by the holders thereof of the remaining 145,994 Certificates of Interest held by others than The Baltimore & Ohio Railroad Company and the Estate of P. A. B. Widener.

On December 31, 1927, Certificates of Interest had been exchanged for a total of 935,117 definitive shares of the Philadelphia and Reading Coal and Iron Corporation, leaving 464,883 Certificates of Interest unexchanged, including 353,325 Certificates of Interest held by The Baltimore and Ohio Railroad Company and the Estate of P. A. B. Widener.

General Mortgage of Reading Company and the Philadelphia and Reading Coal and Iron Company

In a supplemental report filed about May 1, 1927, Reading Company reported to the District Court of the United States for the Eastern District of Pennsylvania that, through diligent and continuous effort upon its part, the outstanding joint General Mortgage 4% bonds had been reduced to \$292,000, as of April 1, 1927, from the total of \$94,627,000 originally dealt with under the Segregation Plan.

For the purpose of carrying out the Final Decree of the Court, Reading Company, as requested by the Attorney General of the United States, and pursuant to Section 2 of Article 9 of the General Mortgage of Reading Company and The Philadelphia & Reading Coal & Iron Company, dated January 5, 1897; paragraph 7 of the Supplemental Indenture to the said General Mortgage, dated December 28, 1923, and paragraph 7 of the Supplemental Indenture to the said General Mortgage, dated January 2, 1924, to which Reading Company, The Philadelphia & Reading Coal & Iron Company, and the Central Union Trust Company of New York, Trustee, were parties, and in conformity with the provisions and conditions of the refunding mortgage of the Philadelphia & Reading Coal & Iron Company to the Central Union Trust Company of New York, Trustee, dated January 2, 1924, and the General Refunding Mortgage of the Reading Company to the Central Union Trust Company of New York, Trustee, dated January 2, 1924, Reading Company and The Philadelphia and

Reading Coal and Iron Company entered into an agreement with the Central Union Trust Company of New York, under and by virtue of which the said mortgagors under the General Mortgage of 1897 deposited with the Central Union Trust Company of New York, as Trustee, Fourth 4½% Liberty Bonds of the United States of America as security for the principal and interest of the \$292,000 par value of outstanding joint General Mortgage bonds, and thereby secured satisfaction of the joint General Mortgage dated January 5, 1897.

By an Order entered May 3, 1927, the Court directed that the Supplemental Report of Reading Company be filed as a part of the records in the Segregation Case.

The amount of the joint General Mortgage 4% Bonds outstanding on December 31, 1927, was \$225,000.

Upon the satisfaction of the General Mortgage of Reading Company and The Philadelphia and Reading Coal and Iron Company, dated January 5, 1897, the First Mortgage bonds of the Philadelphia, Harrisburg and Pittsburgh Railroad Com-

pany, and of The Tamaqua, Hazleton and Northern Railroad Company, which has been held as collateral under the General Mortgage, were canceled and the mortgages securing these bonds also satisfied of record, thus making the new General and Refunding Mortgage of Reading Company, dated January 2, 1924, a first lien on its Philadelphia, Harrisburg and Pittsburgh and Tamaqua, Hazleton and Northern Branches.

Funded Obligations

Changes occurred in the funded obligations of the Company during the year 1927 as follows:

Mortgage and Collateral Trust Bonds outstanding December 31, 1926.....	\$114,295,040.98
General and Refunding Mortgage 4½% Bonds issued, account similar amount of General Mortgage 4's surrendered.....	\$110,666.66
Real Estate Mortgages existing on properties purchased during year.....	430.45
	111,097.11
	\$114,406,138.09

Bonds of Reading Company purchased and placed in treasury.....	\$243,000.00
Real Estate Mortgages paid off during year..	45,000.00
Reading Company's proportion of joint General Mortgage 4% Bonds of Reading Company and The Philadelphia and Reading Coal and Iron Company's surrendered for exchange under Plan of Segregation.....	110,666.66
Reading Company's proportion of joint General Mortgage 4% Bonds redeemed by Trustee	6,666.67
	405,333.33

On December 31, 1927, bonds outstanding were..... \$114,000,804.76

The Management is grateful to the officers and employees of the Company for the faithful and efficient services rendered by them during the past year.

By order of the Board of Directors. AGNEW T. DICE,
President.

Profit and Loss Account

Account	For Year Ended December 31, 1927	Dr.	Cr.
Credit balance December 31, 1926.....			\$10,220,143.65
Balance transferred from income for the year ended December 31, 1927.....		9,829,170.70	
Profit on road and equipment sold.....		47,395.65	
Unrefundable overcharges		29,353.47	
Donations for construction of sidings.....		106,596.69	
Miscellaneous credits		158,099.98	
Dividend appropriations of surplus.....	\$8,397,602.00		
Surplus appropriated for investment in physical property		106,596.69	
Loss on retired road and equipment.....		268,852.47	
Miscellaneous debits		2,456,083.57	
Credit balance December 31, 1927.....		9,161,625.41	
Total	\$20,390,760.14	\$20,390,760.14	

GENERAL BALANCE SHEET—ASSETS

December 31, 1927			
INVESTMENTS:			
Investments in road and equipment.....	\$289,657,904.76		
Improvements on leased railway property.....	28,935,167.13		
Deposits in lieu of mortgaged property sold:			
Cash	\$128,037.07		
Securities	\$2,367,644.23		
Less company's securities.....	1,685,600.00	682,044.23	810,081.30
Miscellaneous physical property.....		13,494,501.95	
		\$332,897,655.14	
INVESTMENTS IN AFFILIATED COMPANIES:			
Stocks	\$22,401,179.73		
Bonds	12,274,563.92		
Advances	8,642,254.84		
		\$43,317,998.49	
OTHER INVESTMENTS:			
Stocks	\$27,309,633.56		
Bonds	11,267,164.51		
Notes	7,182.00		
Advances	95,698.43		
Miscellaneous	404,789.27		
		\$39,084,467.77	
Total Investments		\$415,300,121.40	
CURRENT ASSETS:			
Cash	\$3,398,788.10		
Special deposits	32,986.56		
Loans and bills receivable.....	267,306.00		
Traffic and car-service balances receivable.....	1,683,394.48		
Net balance receivable from agents and conductors.....	1,569,706.57		
Miscellaneous accounts receivable.....	1,940,069.74		
Material and supplies	7,512,211.53		
Interest and dividends receivable.....	1,099,188.42		
Rents receivable			
Total Current Assets.....		\$17,503,651.40	
DEFERRED ASSETS:			
Working fund advances.....	\$44,287.91		
Insurance and other funds.....	\$1,103,580.38		
Less company's securities.....	410,000.00	693,580.38	
Other deferred assets.....		85,114.92	
Total Deferred Assets.....		\$822,983.21	
UNADJUSTED DEBITS:			
Rents and insurance premiums paid in advance.....	\$2,226.79		
Discount on funded debt.....	121,582.47		
Other unadjusted debits.....	616,996.93		
Total Unadjusted Debits.....		\$740,806.19	
Securities issued or assumed—unpledged. \$16,472,116.67			
Securities issued or assumed—pledged... 1,451,999.99			
Grand Total		\$434,367,562.20	

GENERAL BALANCE SHEET—LIABILITIES

December 31, 1927			
STOCK:			
	Book Liability	Held by or for Company	
First preferred	\$28,000,000.00	\$8,800.00	\$27,991,200.00
Second preferred	42,000,000.00	29,350.00	41,970,650.00
Common	70,000,000.00	10,900.00	69,989,100.00
Total Stock	\$140,000,000.00	\$49,050.00	\$139,950,950.00
LONG-TERM DEBT:			
Funded debt secured by mortgage	\$97,346,471.42	\$6,168,666.66	\$91,177,804.76
Funded debt secured by stock collateral	24,295,000.00	1,472,000.00	22,823,000.00
Equipment trust obligations	18,155,000.00	12,330,000.00	5,825,000.00
Total Funded Debt Unmatured	\$139,796,471.42	\$19,970,666.66	\$119,825,804.76
Nonnegotiable debt to affiliated companies.....			324,558.39
Total Long-Term Debt.....			\$120,150,363.15
CURRENT LIABILITIES:			
Traffic and car-service balances payable.....			\$2,202,265.80
Audited accounts and wages payable.....			5,463,657.50
Miscellaneous accounts payable.....			107,259.76
Interest matured unpaid.....			1,395,637.48
Dividends matured unpaid.....			43,546.00
Funded debt matured unpaid.....			57,888.90
Unmatured dividends declared.....			1,819,488.50
Unmatured interest accrued.....			753,404.39
Unmatured rents accrued.....			264,028.82
Other current liabilities.....			131,505.84
Total Current Liabilities.....			\$12,238,682.99
DEFERRED LIABILITIES:			
Other deferred liabilities.....			\$270,123.51
UNADJUSTED CREDITS:			
Tax liability			\$6,483,333.80
Premium on funded debt.....			13,874.77
Insurance and casualty reserves.....			1,102,576.04
Accrued depreciation—Road			5,134,837.77
Accrued depreciation—Equipment			46,743,043.24
Other unadjusted credits.....			581,408.38
Total Unadjusted Credits.....			\$60,059,074.00
CORPORATE SURPLUS:			
Additions to property through income and surplus.....			\$90,798,743.14
Funded debt retired through income and surplus.....			1,738,000.00
Total Appropriated Surplus.....			\$92,536,743.14
Profit and loss credit balance.....			\$9,161,625.41
Total Corporate Surplus.....			\$101,698,368.55
Grand Total			\$434,367,562.20

[ADVERTISEMENT]

Financial

(Continued from page 552)

of \$8.27 per share. Selected items from the income statement follow:

LEHIGH VALLEY		
	1927	1926
Average mileage operated	1,363.85	1,363.76
RAILWAY OPERATING REVENUES	\$74,502,819	\$80,453,150
Maintenance of way	8,310,466	9,176,529
Maintenance of equip'm't	16,880,948	17,190,980
Transportation	30,276,912	30,935,758
TOTAL OPERATING EXPENSES	59,270,392	60,958,636
Operating ratio	80	76
NET REVENUE FROM OPERATIONS	15,232,427	19,494,514
Railway tax accruals	3,473,512	4,193,976
Railway operating income	11,749,296	15,288,738
Equipment rents, net cr.	1,901,697	1,588,811
Jt. facility rents, net cr.	11,805	dr. 102,678
NET RAILWAY OPERATING INCOME	9,835,767	13,802,605
Non-operating income	1,635,798	3,164,021
GROSS INCOME	11,471,565	16,966,626
Rent for leased roads	2,352,459	2,342,039
Interest on funded debt	3,527,415	3,529,005
TOTAL REDUCTIONS FROM GROSS INCOME	7,205,558	6,945,513
NET INCOME	4,266,007	10,021,113

MISSISSIPPI EASTERN.—Acquisition.—The Interstate Commerce Commission has made public a proposed report by Examiner O. D. Weed recommending that the commission authorize the acquisition and operation by this company of a line from Crandall to Cliff Williams, Miss., about 25 miles, owned and operated by the Long-Bell Lumber Company.

MOBILE & OHIO.—Equipment Trusts Authorized.—The Interstate Commerce Commission has authorized the issuance of \$1,620,000, 4 per cent equipment trust certificates, series Q, to be sold to the First National Bank of New York, which made the highest of 10 bids, at 98.43, which price gives an average annual cost to the carrier of 4.25 per cent. The equipment includes 13 locomotives, 7 passenger train cars, 720 freight train cars and 6 rail motor cars.

MONTOUR.—Acquisition.—This company, controlled by the Pittsburgh Coal Company, has applied to the Interstate Commerce Commission for authority to acquire control of the Pittsburgh, Lisbon & Western, also controlled by the coal company, by purchase of 1,500 shares of its capital stock for \$425,000.

NORTHERN PACIFIC.—Abandonment.—The Interstate Commerce Commission has issued a certificate authorizing this company to abandon its old line in Sanders County, Mont., extending from its eastern connection with its new main line at Pinehurst, to its western connection with that new main line at Trout Creek.

SEABOARD AIR LINE.—Bonds Authorized.—The Interstate Commerce Commission has granted authority to this company to issue refunding mortgage bonds in an aggregate amount which, when taken at their fair market value at the time of pledge, will not exceed \$502,545, said bonds to be pledged under

applicant's first and consolidated mortgage and to issue not exceeding \$507,500 of first and consolidated mortgage gold bonds, Series A, the bonds to be pledged and repledged from time to time as collateral for short-term notes.

SOUTHERN.—Equipment Trusts Authorized.—The Interstate Commerce Commission has authorized the issuance of \$9,840,000, 4 per cent equipment trust certificates, Series BB, to be sold to the First National Bank of New York at 98.522, giving an average annual cost to the carrier of approximately 4.236 per cent. The equipment includes 43 locomotives, 5,450 freight train cars and 25 passenger train cars, having a total approximate cost of \$12,312,950.

TEXAS & PACIFIC.—1927 Earnings.—A preliminary statement of earnings for 1927 shows net income after interest and other charges of \$4,113,981, equivalent after allowance for the 5 per cent dividends on the preferred stock, to \$7.55 per share on the outstanding common stock. The net income in 1926 was \$3,927,341, or \$7.07 per share. Selected items from the income statement follow:

TEXAS & PACIFIC		
	1927	1926
Average mileage operated	1,980.87	1,953.62
RAILWAY OPERATING REVENUES	\$38,949,539	\$35,449,650
Maintenance of way	6,832,210	5,414,907
Maintenance of equip'm't	6,801,243	6,511,860
Transportation	13,053,386	12,473,426
TOTAL OPERATING EXPENSES	28,797,073	26,488,388
Operating ratio	73.93	74.72
NET REVENUE FROM OPERATIONS	10,152,466	8,961,262
Railway tax accruals	1,839,200	1,849,921
Railway operating income	8,296,789	7,098,476
Hire of frt. cars, Dr.		
Bal.	1,768,324	953,835
Jt. facility rents, Cr.	84,486	9,086
NET RAILWAY OPERATING INCOME	6,497,569	6,240,676
Non-operating income	566,106	368,658
GROSS INCOME	7,063,675	6,609,333
Interest on funded debt	2,752,480	2,474,731
TOTAL REDUCTIONS FROM GROSS INCOME	2,949,695	2,681,993
NET INCOME	4,113,981	3,927,341

WABASH.—Minority Stockholder Asks for Proxies.—William F. Dickson, 5 Nassau Street, New York, who is reputed to control more than 100,000 shares of Wabash common stock, on February 24 addressed a letter to the independent stockholders of the company asking for proxies and suggesting that these stockholders should have a representative on the board of directors. His letter follows:

"As you no doubt saw in the public press the Willoughby Company of Philadelphia brought suit early last year in the state courts of Indiana against the Wabash for the ostensible purpose of obtaining a ruling by the court, that before dividends could be paid upon the common stock, which they declared to be imminent, an amount must be paid to the holders of the 'A' stock equivalent to that which would have been paid had the regular five per cent dividend been paid from the organization of the company upon the theory that although this preferred 'A' is expressly made non-cumulative, not only by the language of the stock certificate itself but also by the provisions of the articles of incorporation, such dividend none the less might be considered as cumulative in effect for such years as its earnings were sufficient for its payment.

"Subsequently an action was brought by one Barclay in the United States District Court for the Southern District of New York, the complaint in which was framed along somewhat similar

lines. In view of the fact that the Willoughby case had been so long pending and yet undisposed of, I felt that the independent common stock holders should be represented, and as a substantial holder of the common stock, I intervened in the Barclay case as a party defendant. Since then as has appeared in the public press, judgment has been rendered dismissing Mr. Barclay's complaint on the merits, the court holding flatly that the Preferred 'A' dividend is actually non-cumulative and that its non-payment in any given year does not give the holder of 'A' stock any lien upon subsequent earnings of the railroad company.

"Since then the Willoughby Company has intervened in the New York action and to accomplish that accepted the terms imposed by the court, that it should be bound in all respects by the district court judgment as completely as though it had been an original party plaintiff in the action.

"As near as I can ascertain the independent common stock holders have no representation upon the board of directors and it seems to me greatly to their interest that they should have representation, especially in view of the fact that we now read so much of a proposed merger in which this railroad company will be a substantial factor.

"In view of the situation that has developed, I have decided to ask for proxies from the common stock holders for use at the approaching annual meeting and would thank you if you would be good enough to execute the enclosed proxy, taking care to fill in the number of shares of which you are the record holder and return to me at your earliest convenience."

WESTERN MARYLAND.—1927 Earnings.—A preliminary statement of earnings for 1927 shows net income after interest and other charges of \$3,275,078, equivalent to \$18.45 per share on the first preferred stock, dividends on which are now in arrears to the extent of 66½ per cent. The net income in 1926 was \$3,259,339, or \$18.37 per share on the first preferred stock. Selected items from the income statement follow:

WESTERN MARYLAND		
	1927	1926
RAILWAY OPERATING REVENUES	\$21,866,171	\$25,259,575
Maintenance of way	3,289,672	2,952,965
Maintenance of equip'm't	4,552,230	6,098,196
Transportation	6,076,838	7,276,518
TOTAL OPERATING EXPENSES	14,993,312	17,404,633
Operating ratio	68.57	68.90
NET REVENUE FROM OPERATIONS	6,872,859	7,854,942
Railway tax accruals	1,180,027	1,096,082
Railway operating income	5,691,734	6,758,125
Equipment rents, net cr.	632,743	dr. 489,196
Jt. facility rents, net dr.	192,884	193,744
NET RAILWAY OPERATING INCOME	6,131,593	6,075,223
Non-operating income	207,656	188,664
GROSS INCOME	6,339,249	6,263,887
Fixed charges	3,064,171	3,004,548
NET INCOME	3,275,078	3,259,339

Average Price of Stocks and of Bonds

	Last Feb. 28	Last week	Last year
Average price of 20 representative railway stocks	116.21	115.70	107.61
Average price of 20 representative railway bonds	96.93	96.82	93.08

Dividends Declared

Chesapeake & Ohio.—Common, \$2.50, quarterly, payable April 1 to holders of record March 8. Preferred, \$3.25, semi-annually, payable July 1 to holders of record June 8.

Chesapeake Corporation.—\$0.75, quarterly, payable April 1 to holders of record March 8.

Chicago, North Shore & Milwaukee.—Prior lien, 1¼ per cent; preferred, 1¼ per cent, quarterly, both payable April 1 to holders of record March 15.

Erie & Pittsburgh.—\$0.87½, quarterly, payable March 10 to holders of record February 29.

Fonda, Johnstown & Gloversville.—Preferred, 1¼ per cent, quarterly, payable March 15 to holders of record March 10.

Hocking Valley.—\$2.50, quarterly, payable March 31 to holders of record March 8.

New York, New Haven & Hartford.—Preferred, 1¼ per cent, quarterly, payable April 2 to holders of record February 29.

Reading Company.—Second preferred, 1 per cent, quarterly, payable April 12 to holders of record March 22.

Officers

Executive

C. M. Dukes, assistant to the chief operating officer of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Chicago, has been promoted to assistant vice-president in charge of operation, with headquarters at the same point.

Edward H. Maggard, president and general manager of the Petaluma & Santa Rosa, with headquarters at Petaluma, Cal., has been elected president and general manager of the Northwestern Pacific, with headquarters at San Francisco, Cal., succeeding **W. S. Palmer**, resigned.

Curtis M. Yohe, purchasing agent for the Pittsburgh & Lake Erie, with headquarters at Pittsburgh, Pa., has been appointed assistant to the president of the New York Central Lines, with the same headquarters. Mr. Yohe was born on September 22, 1887, at Connellsville, Pa., and was graduated from Cornell Univer-



Curtis M. Yohe

sity in 1910. He entered railway service with the Pittsburgh & Lake Erie in 1913 as a clerk in the purchasing department at Pittsburgh. In 1920 Mr. Yohe became purchasing agent of that road, which position he was holding at the time of his recent appointment as assistant to the president of the New York Central Lines.

Financial, Legal and Accounting

Robert N. Brockway, chief clerk to the treasurer of the New York Central, has been appointed an assistant treasurer, with headquarters at New York.

Operating

C. K. Bartlett, trainmaster on the Quebec Central, has been appointed superintendent, with headquarters at Sher-

brooke, Que., succeeding **J. T. Reid**, deceased. **W. J. Nutbrown**, chief train dispatcher, has been appointed trainmaster, succeeding Mr. Bartlett. **R. E. Rheault**, train dispatcher has been appointed chief train dispatcher, succeeding Mr. Nutbrown.

The jurisdiction of **W. White**, superintendent of the Mahoning division of the Western district of the Erie, with headquarters at Youngstown, O., has been extended to include the main line of the Erie between BK Tower at Meadville, Pa., and KX Tower at Kent, O. This additional territory will be known as the Second district of the Mahoning division.

S. L. Van Akin has been appointed joint superintendent of telegraph of the New York Central Lines Buffalo and East, the Western Union Telegraph Company and the Great North Western Telegraph Company, with headquarters at New York, succeeding **A. B. Taylor**, retired. **C. L. Steinhart** has been appointed assistant superintendent of telegraph of the above mentioned companies with headquarters at New York, succeeding Mr. Van Akin.

W. R. Triem, freight trainmaster on the Panhandle division of the Pennsylvania, with headquarters at Pittsburgh, Pa., has been promoted to superintendent of the Buffalo division with headquarters at Buffalo, N. Y. **J. H. McClintock**, trainmaster on the Columbus division at Columbus, Ohio, has been transferred to succeed Mr. Triem, and **F. M. Krick**, assistant trainmaster at Columbus, has been promoted to succeed Mr. McClintock.

Bernard L. Pedneau, who has been appointed superintendent of the New River division of the Virginian, with headquarters at Princeton, W. Va., was born on September 29, 1888 at Greensville county, Va. He entered railway service in November, 1904, with the Atlantic Coast Line. In August, 1910, Mr. Pedneau entered the service of the Virginian as telegraph operator on the Norfolk division, and in February, 1913, was advanced to dispatcher at Victoria, Va. He became chief dispatcher in May, 1918, and on July 1, 1921, was transferred to the New River division and appointed trainmaster, with headquarters at Princeton, W. Va., which position he was holding at the time of his recent appointment as superintendent of the New River division.

George S. Baxter, superintendent of the Minnesota division of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Enderlin, S. D., has been transferred to the Missouri River division, with headquarters at Bismark, N. D., and has been granted a leave of absence following that transfer which occurred on February 21. **Charles M. Winter**, assistant to the general manager, with headquarters at Minneapolis, Minn., has been appointed acting superintendent of the Missouri River division replacing Mr. Baxter. **William H. Cor-**

bett, superintendent of the Duluth Superior division, with headquarters at Superior, Wis., has been transferred to the Minnesota division, succeeding Mr. Baxter. **Charles L. Simpson**, superintendent of the Missouri River division, has been appointed superintendent of the Duluth Superior division, succeeding Mr. Corbett.

George H. Hill, who has been promoted to superintendent of the Bellingham division of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Bellingham, Wash., has been in the employ of the Milwaukee since his first entry into railway service on March 1, 1900. Mr. Hill was born in Clinton county, Iowa, in December, 1884, and obtained his first railroad experience at the age of 15 years as a telegraph operator on the Chicago and Council Bluffs division of the Milwaukee. Four years later he was promoted to train dispatcher at Marion, Iowa, being subsequently transferred to the Trans-Missouri division as a dispatcher. He served as a dispatcher and as a chief dispatcher on this division and on the Iowa, Musselshell, Rocky Mountain, Missoula and Coast divisions until 1924 when he was promoted to trainmaster on the Idaho division, with headquarters at St. Maries, Idaho. Mr. Hill was promoted to superintendent of the Bellingham division on January 1, 1928.

Walter H. Mann, who has been promoted to superintendent of the Winnipeg division of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Thief River Falls, Minn., was born on August 5, 1882, at Mayville, Wis. He attended the Mayville High school and entered railway service at the age of 18 years as a station helper on the Wisconsin Central (now a part of the Soo line). In 1902 Mr. Mann served as a train baggage helper, becoming an operator in the following year. For the four years from 1903 to 1907 he acted as operator and agent at various stations on the Wisconsin Central and the Chicago, Milwaukee & St. Paul and he was then appointed a trick dispatcher on the Wisconsin Central. In 1917 Mr. Mann was advanced to chief dispatcher on the Soo line, being appointed trainmaster of the First district of the Fond du Lac division, with headquarters at Fond du Lac, Wis., in 1923. His promotion to superintendent of the Winnipeg division became effective on February 15.

Clinton B. Wilson, who has been promoted to superintendent of the Twin City Terminal division of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn., first entered the service of that railroad in 1925. He was born in 1882 at Cherokee, Iowa, and was graduated in civil engineering from Iowa State College in 1904, he entered railway service in the same year in the engineering department of the Illinois Central. For the next five years he was engaged in the location and construction of new lines on the Florida East Coast, the Atlanta, Birmingham &

Atlantic (now the Atlanta, Birmingham & Coast) and the Chicago & North Western. In 1909 Mr. Wilson was appointed assistant engineer of track elevation of the Chicago, Rock Island & Pacific, his work with this railroad until 1916 also including maintenance and construction. From 1916 to 1919 he was with the Interstate Commerce Commission in federal valuation work and then entered the service of the Erie as a trainmaster. Mr. Wilson was appointed trainmaster of the Soo line in 1925, acting as trainmaster on the Gladstone division, with headquarters at Gladstone Mich., until his promotion to superintendent on February 15.

C. I. Luque, who has been promoted to superintendent of transportation of the Mexican, with headquarters at Mexico, D. F., has completed 20 years of service in the operating department of that railway. He was born on February 9, 1888, at Tula, Hidalgo, Mex., and entered railway service at the age of 12 years as a telegraph operator on the Mexican Central. Two years later he became a telegraph operator on the Interoceanic (now a part of the National of Mexico), later being advanced to station agent. From 1906 to 1908 Mr. Luque served the El Oro Mining & Railway Company successively as telegraph operator, station agent, dispatcher and assistant to the superintendent. On the latter date he began his service with the Mexican as a dispatcher. He was advanced to chief dispatcher and then to trainmaster and in 1921 he was promoted to superintendent of the Second



C. I. Luque

division, with headquarters at Orizaba, Mex. Mr. Luque was promoted to assistant superintendent of transportation in October, 1926, becoming superintendent of transportation in January, 1928.

Traffic

F. C. Campbell, general agent of the Wheeling & Lake Erie and the Loarin & West Virginia, with headquarters at New York City, has been appointed assistant general freight agent, with headquarters at Cleveland, O. **T. A. Wey-**

brecht has been appointed general agent at New York, succeeding Mr. Campbell.

Clarence M. Knowles has been appointed general agent in the passenger department of the Erie, with headquarters at Buffalo, N. Y., succeeding **J. H. Webster**, transferred.

M. B. Hutchins, traveling freight agent for the Chicago & North Western at St. Louis, Mo., has been promoted to general agent, with headquarters at Cincinnati, Ohio.

Thomas D. Elliott, general agent for the Boston & Maine at Cleveland, Ohio, has been promoted to general western agent, with headquarters at Chicago, succeeding **H. S. Garvey**, deceased.

E. O. Burton, agent on the Chicago Junction and the Chicago River & Indiana, at Chicago, has been appointed general agent of the Chicago Junction in charge of union freight stations, with headquarters at Chicago.

J. J. Robinson has been appointed assistant general freight agent of the Bessemer & Lake Erie, with headquarters at Pittsburgh, Pa., succeeding **Edward Campbell**, promoted. **R. S. Wolford** has been appointed chief of the tariff bureau.

William Baird, assistant European passenger manager of the Canadian Pacific has been appointed steamship passenger traffic manager, with headquarters at Montreal, Que., succeeding **Walter Maughan**, who has resigned.

Harry T. Harlow, general western passenger agent of the Erie, with headquarters at Chicago, has been promoted to general passenger agent, with headquarters at the same point, succeeding **H. C. Holabird**, who was relieved from active duties on March 1. **Thomas R. Patton** has been appointed general agent in the passenger department at Cleveland, Ohio.

The title of **C. H. Morehouse**, general agent for the Atchison, Topeka & Santa Fe, has been changed to general agent, freight department, and that of **E. F. Burnett**, district passenger agent, has been changed to general agent, passenger department. Both will have headquarters as before in New York, the former at 225 Broadway and the latter at 505 Fifth avenue.

W. J. Moffatt, district passenger agent of the Canadian National, with headquarters at Toronto, Ont., has been appointed assistant general passenger agent, with the same headquarters, succeeding **C. R. Horning**, deceased. **H. F. Tilley**, general agent, with headquarters at Boston, Mass., succeeds Mr. Moffatt as district passenger agent at Toronto, and **T. E. P. Pringle**, general agent at Montreal, Que., has been transferred in the same capacity to Boston, succeeding Mr. Tilley.

O. C. Olsen, foreign freight agent of the Missouri Pacific, with headquarters at St. Louis, Mo., has been promoted to general foreign freight agent, with head-

quarters at the same point. Mr. Olsen will have jurisdiction over export, import and coastwise traffic handled by the Missouri Pacific. **W. F. Severns**, chief clerk to the freight traffic manager at St. Louis, has been promoted to assistant general freight agent, with headquarters at the same point.

Walter Shipley, who has been promoted to general traffic manager of the Mobile & Ohio, with headquarters at St. Louis, Mo., was born at Piqua, Ohio, on January 6, 1872. He entered railway



Walter Shipley

service at the age of 17 years as a clerk in the general freight office of the Texas & Pacific at Dallas, Tex., subsequently serving that railroad until 1909 as a clerk in the local freight offices at Shreveport, La., and Paris, Tex., and in the office of the auditor and general freight agent, as traveling freight agent at Ft. Worth, Tex., and as traveling freight agent at Louisville, Ky. On August 15, 1909, Mr. Shipley became a commercial agent for the Southern at Houston, Tex., later serving that company as district freight agent at New Orleans, La., as division freight agent at Macon, Ga., and as general freight agent at Charlotte, N. C. He was appointed general agent for the American Railway Association at Charleston, S. C., on August 1, 1917, and on July 10, 1918, he returned to the Southern as general agent at Memphis, Tenn. Mr. Shipley was appointed traffic manager of the Mobile & Ohio, with headquarters at St. Louis, on March 1, 1920.

Mechanical

The jurisdiction of **M. J. Brown**, master mechanic on the Chicago, Burlington & Quincy, with headquarters at Chicago, has been extended to include the Aurora division and the Eola repair track. **E. J. Cyr**, formerly assistant master mechanic at Galesburg, Ill., has been appointed assistant master mechanic on the Chicago and Aurora divisions, with headquarters at Aurora, Ill., the office of master mechanic at Aurora, has been abolished. **W. A. Kelly**, master mechanic at Ottumwa, Iowa, has been appointed assistant master mechanic with jurisdiction over the West Ottumwa and

Creston divisions and with headquarters at Ottumwa. **H. C. Turner**, assistant master mechanic at Burlington, Iowa, will now have jurisdiction over the East Ottumwa and Galesburg divisions. The jurisdiction of **G. P. Trachta**, master mechanic at Galesburg, has been extended to include the East Ottumwa division. The jurisdiction of **H. G. Kastlin**, master mechanic at Creston, Iowa, has been extended to include the West Ottumwa division.

Engineering, Maintenance of Way and Signaling

R. A. Hendrie, telephone engineer of the Missouri-Kansas-Texas, with headquarters at Denison, Tex., has been appointed telegraph and telephone engineer of the Missouri Pacific, with headquarters at St. Louis, Mo.

Robert Faries, superintendent of the Buffalo division of the Pennsylvania, with headquarters at Buffalo, N. Y., has been appointed assistant chief engineer of maintenance, with headquarters at Philadelphia, Pa., succeeding **G. W. Snyder, II**, deceased.

Guy W. Harris, acting chief engineer of the Atchison, Topeka & Santa Fe system, has been promoted to chief engineer of the system, with headquarters at Chicago, succeeding **C. F. W. Felt**, deceased. Before his appointment as acting chief engineer in November, 1927, Mr. Harris was assistant chief engineer with headquarters at Chicago.

Charles L. Bates, who has been promoted to maintenance of way engineer of the Pacific Great Eastern, with headquarters at Squamish, B. C., was born on June 10, 1880, at Mason City, Iowa. He graduated from the Massachusetts Institute of Technology in 1903, then entering railway service as a draftsman on the Cleveland, Cincinnati, Chicago & St. Louis. Later he served this railroad as an inspector on engineering work and in 1904 he became a resident engineer on construction on the Canadian Pacific. Mr. Bates remained with the Western lines of the C. P. R. as resident and assistant engineer on construction, location and maintenance until 1915 when he resigned to enter private practice as a municipal engineer in Saskatchewan. He returned to railway service in 1920 as an assistant engineer for the Canadian Pacific on dock construction at Vancouver, B. C. From 1921 to 1926 Mr. Bates served as engineer and superintendent of the North-Western Dredging Company Vancouver, becoming assistant engineer on the Pacific Great Eastern in charge of betterments, with headquarters at Squamish in March 1927.

Walter Scott Johns, Jr., who has been promoted to engineer of maintenance of way on the staff of the chief engineer of the Western region of the Pennsylvania, with headquarters at Chicago, has completed more than 25 years of service in the engineering department of that company. Mr. Johns was born on Decem-

ber 27, 1879, at Front Royal, Va. He graduated from the West Chester Normal School, and then from a civil engineering course at Lehigh University in 1902 and entering railway service on July 1 of that year as a rodman on the Cambria and Clearfield division of the



Walter Scott Johns, Jr.

Pennsylvania. Later he served in the same capacity on the Philadelphia Terminal division and on November 15, 1904, he was advanced to transitman on the Altoona division. Mr. Johns was promoted to assistant supervisor on the Central division on August 1, 1905, being transferred to the Middle division two years later, where he remained until March 9, 1910, when he was advanced to supervisor on the Allegheny division. He served for the next 15 years as supervisor on that division and on the Tyronne, Pittsburgh, Baltimore, Philadelphia Terminal and Eastern divisions and as acting division engineer of the Akron division. On April 1, 1926, he was promoted to division engineer of the Monongahela division and on January 16, 1927, he was transferred to the St. Louis division, transferring to Chicago from that division.

Obituary

John C. Thurman, general auditor of the Greenbay & Western, with headquarters at Greenbay, Wis., for the past thirty-two years, died on February 27, at Wausau, Wis., following a heart attack.

William A. Gore, formerly general manager of the Virginian, with headquarters at Norfolk, Va., died at his home there on February 24. On February 1 Mr. Gore was granted a year's furlough on account of ill health, at which time the position of general manager was abolished.

Herbert R. Wheeler, treasurer of the Boston & Maine, with headquarters at Boston, Mass., died at his home in Brookline, Mass., on February 25, after an illness of several weeks. Mr. Wheeler was born on May 10, 1864, at Dover, N. H., and attended Philips Andover Academy for a year. He entered rail-

way service on June 27, 1882, in the treasury department of the Boston & Maine, and has served in that department since that time.

Thomas H. Marshall, assistant treasurer of the Denver & Rio Grande Western since 1917, died at St. Joseph's hospital, Denver, Colo., on February 23, following a heart attack the previous day. Mr. Marshall was born at Port Hope, Ont., in 1861. During 1916 he served as treasurer of the Denver & Rio Grande.

Nelson B. Burr, vice-president of the St. Louis Southwestern, with headquarters at New York, who died on February 11 at his home there, was born on February 3, 1871, at Auburn, N. Y. He was graduated from Yale University in 1893, with the degree of B. S., and from Harvard University in 1895, with the degree of LL. B. From 1895 until 1910 Mr. Burr practiced law in New York, and since 1910 has been vice-president of the St. Louis Southwestern.

C. E. E. Ussher, general passenger traffic manager of the Canadian Pacific, with headquarters at Montreal, Que., who died on February 22 in that city, was born on December 29, 1857, at Niagara Falls, Ontario, and entered the service of the Canadian Pacific on November 1, 1886, as chief ticket clerk in the passenger department at Montreal. On April 1, 1889, he was appointed assistant general passenger agent at Montreal, and on January 1, 1898, general passenger agent for the Eastern lines, with the same headquarters. On Oc-



C. E. E. Ussher

tober 1, 1903, he became general passenger agent for the Western lines, with headquarters at Winnipeg. On January 1, 1907, Mr. Ussher was appointed assistant passenger traffic manager at Montreal, and on October 1, 1910, became passenger traffic manager for the system. On September 1, 1922, Mr. Ussher was appointed general passenger traffic manager of the Canadian Pacific Railway, which gave him jurisdiction over passenger traffic matters covering rail and steamships, on the Atlantic & Pacific, as well as charge of the entire hotel chain of the company, which position he was holding at the time of his death.